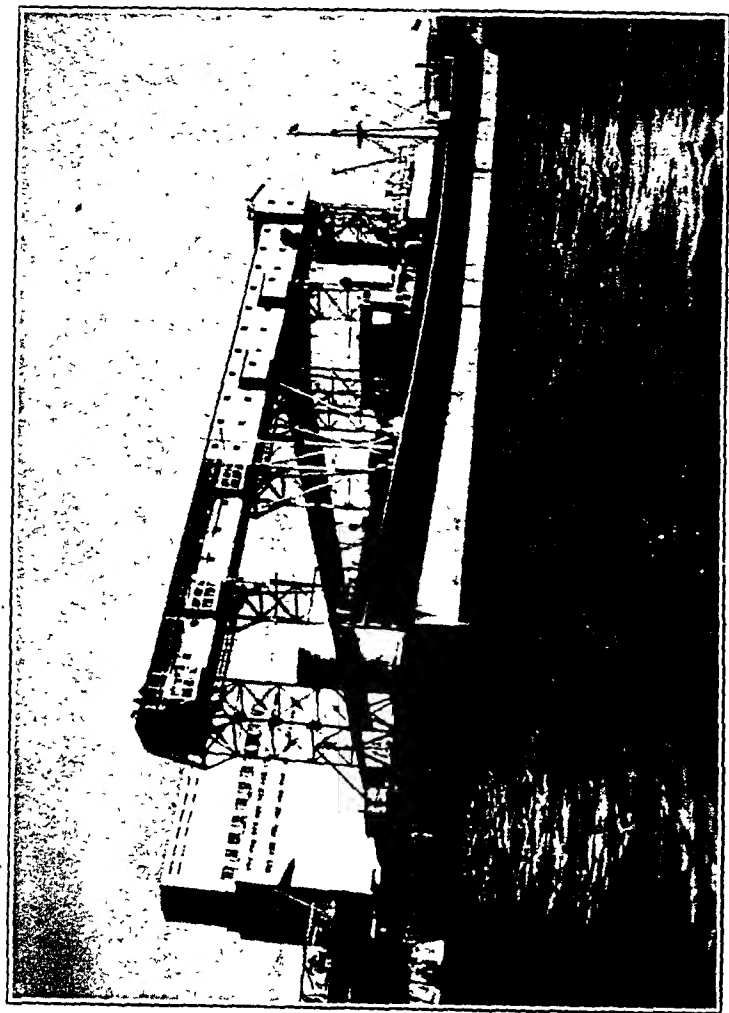


THE CANADIAN GRAIN TRADE



STEAMER *Fairwoth* LOADING AT CHURCHILL, SEPTEMBER, 1931

THE CANADIAN GRAIN TRADE

By

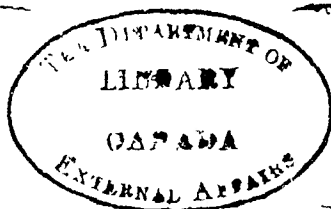
DUNCAN ALEXANDER MacGIBBON, M.A., Ph.D.

Member of the Royal Grain Inquiry Commission, 1923-4; Member of the Board of Grain Commissioners for Canada; Sometime Professor of Political Economy at the University of Alberta.



TORONTO: THE MACMILLAN COMPANY OF
CANADA LIMITED, AT ST. MARTIN'S HOUSE

1932



Copyright, Canada, 1932
by
THE MACMILLAN COMPANY OF CANADA LIMITED

All rights reserved—no part of this book
may be reproduced in any form without
permission in writing from the publishers.

PRINTED IN CANADA

8.

PREFACE

IN 1925, after the Royal Grain Inquiry Commission had completed its report, I was urged to prepare a study of the Canadian Grain Trade. I delayed doing so because I wished to watch the evolution of the Pool movement which had begun in 1923. In 1927 some chapters were written, and the first draft of the present work was practically complete, when I accepted my present position in 1929. The press of official duties has enabled me to work only at odd moments at such revisions as were necessary. But during these last few years the grain trade has moved at such a pace that I have had to re-write nearly the whole manuscript.

In no department of commerce has Canada a better record than in the handling and marketing of cereals. The Canadian grain trade has its roots far back in the economic history of the country, and has grown and developed with the growth of the Dominion. I do not think it too much to claim that the method of handling grain in bulk under government supervision has attained to a higher degree of technical efficiency in Canada than in any other country exporting grain.

In 1915, C. B. Piper of Winnipeg, published a small volume on the *Principles of the Grain Trade of Western Canada*. I have had this volume in mind in preparing the present study. I have not dealt extensively with the co-operative movement, since this feature of western Canadian

life has been most adequately treated in other studies. I have been interested chiefly in trying to set forth the exact methods by which Canadian grain is handled and sold, and to draw attention to the extensive organization and interests that the grain trade involves. It is my hope that the present study, by explaining the technique of the trade, will make it possible for any person to discover the bearings of questions that arise in connection therewith without too much difficulty. The work aims to present a comprehensive picture of the Canadian grain trade as it exists at the present time.

I found it impossible to understand certain aspects of the system without making preliminary studies of the earlier grain trade centred in Ontario and Quebec. This led me to prepare the historical sketch of the trade contained in the first chapters. Much more research remains to be done, however, before the early history of the Canadian grain trade is fully known.

I am under obligations to a great many people for personal information and assistance, for which I wish here to express my sincere thanks.

I wish especially to thank Professor H. A. Innis, of the University of Toronto, for very helpful criticism of the first chapters dealing with the early history of the trade. Mr. D. C. MacLachlan, Mr. H. E. Sellers, Mr. R. T. Evans and Mr. Andrew Cairns read the manuscript before it went to the publisher, and I am indebted to them for pointing out minor inaccuracies and omissions. I owe a similar debt to Mr. J. W. Spears and Mr. R. J. Williams in connection with the chapter dealing with Financing the Grain Trade, and to Professor H. C. Grant, of Manitoba Agricultural College, with respect to the cost of production of wheat. While these gentlemen very kindly gave me valuable aid, I wish it to

PREFACE

vii

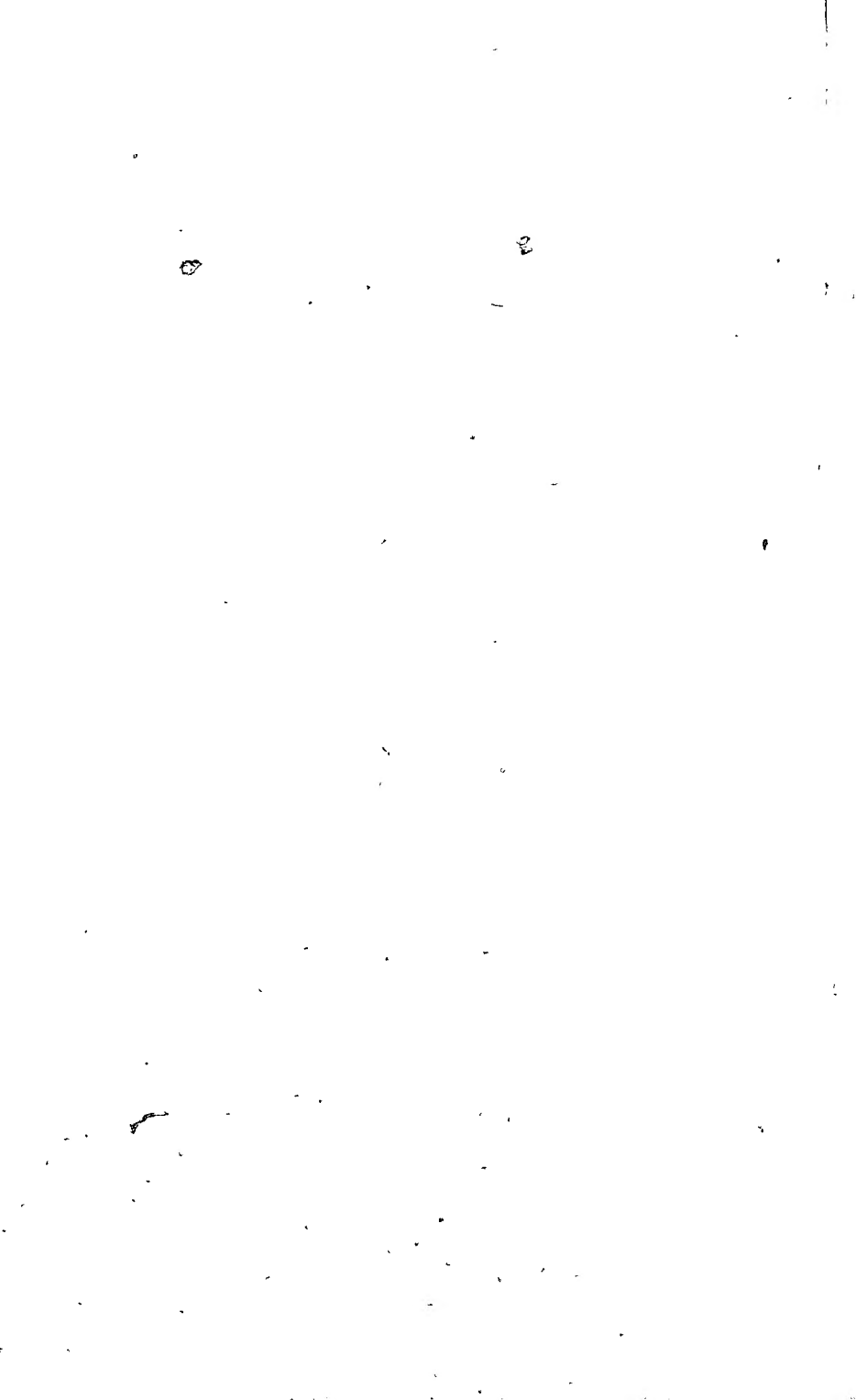
be quite clear that they are in no way responsible for the opinions or the materials contained in the book.

Finally, I wish to thank Miss Winnifred Johnston for invaluable assistance in the preparation of the manuscript.

D. A. MacGIBBON.

Winnipeg,

January 15, 1932.



CONTENTS

PART I

CHAPTER I.

	PAGE
EARLY STAGES OF DEVELOPMENT—	3
I Under the French Regime	4
II Exports to Great Britain	6
III Struggle and Growth	10
IV Prosperity and Hard Times	15

CHAPTER II.

THE OPENING UP OF MANITOBA—	23
I The Selkirk Colonists	23
II The First Shipments	25
III Increased Production in Manitoba	28
IV Organization of the Trade	31

CHAPTER III.

THE GROWING WEST—	39
I Increase of Facilities	40
II Grievances and Remedial Legislation	45
III Organization of the Grain Growers	48
IV Attacks upon the Exchange	52

CONTENTS.

CHAPTER IV.

THE LARGEST EXPORTER OF WHEAT—	55
I Effect of the War upon Wheat Production in Canada	55
II Government Control of Marketing	57
III The Canadian Wheat Board of 1919	61
IV Decline in Wheat Prices	64
V Revisions of the Canada Grain Act in 1925	65
VI Organization of the Wheat Pools	67
VII The Opening of the Pacific Route	71
VIII The Disastrous Years of 1929 and 1930	73
IX Canadian Production and Exports of Wheat 1867-1929	80

PART II

CHAPTER V.

THE COUNTRY ELEVATOR—	85
I The First Elevators	86
II Loading Platforms	88
III Country Elevator Construction	90
IV Dual Functions of the Country Elevator	93
V Grades, Weights and Dockage	95
VI Street and Track Purchases	101
VII Country Elevator Profits	105
VIII Cleaning Grain at Country Elevators	109
IX The Country Elevator Agent	111
X The Problem of Rapid Delivery	115

CHAPTER VI.

TRANSPORTATION TO THE TERMINALS—	118
I Preparations for Moving the Crop	120
II The Distribution of Cars	122
III The Car Order Book	125
IV Handling the Traffic	129
V Leakage in Transit	132
VI Bulkheading Cars	134
VII Railway Rates on Grain	136
VIII Stoppage of Cars in Transit	141

CONTENTS

xi

CHAPTER VII.

TERMINAL ELEVATORS—	143
I Classes of Terminal Elevators	145
II Evolution of the Public Terminal Elevator System	148
III The Problem of Overages	152
IV Rise of the Private Terminal System	157
V The Legislation for Sample Markets	164
VI The "Mixing" Problem	168
VII Government Supervision of Terminal Elevators	177
VIII Cleaning Grain at the Terminals	180
IX Terminal Elevator Charges	181

CHAPTER VIII.

INSPECTING AND WEIGHING—	183
I Grades of Grain	184
II The Grain Standards Committees	192
III Sampling and Grading	195
IV Re-Inspection, Survey and Appeals	207
V Official Weighing	209
VI The Tariff of Charges	212
VII Garnet Wheat	214
VIII Protein Content as a Basis for Grading Wheat	217
IX Drying of Wheat	221
X Decentralization of the Inspection Service	225

CHAPTER IX.

THE EASTERN ROUTE—	230
I The Lake Shippers Clearance Association	232
II The Bulk Freighter	238
III The Georgian Bay and Lower Lake Ports	241
IV The Port of Buffalo	245
V The St. Lawrence Route	247
VI Handling Grain Through the Eastern Division	250
VII The Atlantic Ports	254
VIII Freight and Handling Charges	257

CHAPTER X.

THE PACIFIC ROUTE—	266
I The Port of Vancouver	266
II Shipments to the Orient	274
III New Westminster and Victoria	275
IV Prince Rupert	277

CHAPTER XI.

THE WINNIPEG GRAIN EXCHANGE—	280
I The Organization of the Exchange	282
II The Market	288
III The Clearing Association	297
IV Winnipeg Prices	299
V Investigation of Futures Trading	301

CHAPTER XII.

THE GRAIN COMPANIES—	304
I Country Elevator Companies	304
II The North-West Grain Dealers' Association	313
III The Terminal Companies	318
IV Concentration and Integration	319

CHAPTER XIII.

THE CANADIAN WHEAT POOL—	329
I Basic Principles	330
II The Five Years' Contract	331
III The Provincial Pools	337
IV Central Selling Agency	338
V Pool Elevators	340
VI Magnitude of the Pool	343
VII Methods of Finance	346

CHAPTER XIV.

FINANCING THE GRAIN TRADE—	356
I Loans to Country Elevator Companies	358
II Loans on Grain in Terminal Elevators	363
III Loans to Exporters	368
IV Hedging and Speculation	371
V Bonding and Insurance	372

CHAPTER XV.

FEDERAL CONTROL OF THE GRAIN TRADE—	375
I The Constitutional Problem	377
II Powers of the Board of Grain Commissioners	381
III The Dominion Government Elevator System	384
IV Administrative Functions of the Board	388
V Personnel and Cost of Maintenance	394

PART III

CHAPTER XVI.

THE CANADIAN MILLING INDUSTRY AND THE GRAIN TRADE—	399
I Development of the Milling Industry	400
II Change in Milling Methods	402
III Rise of the Large Milling Companies	404
IV The Export Trade in Flour	409
V Basis of the Export Trade	411
VI Coarse Grains	416

CHAPTER XVII.

THE EXPORT MARKET FOR CANADIAN GRAIN—	418
I Canada on the Crest of the Wave	418
II Accumulating Stocks and Declining Prices	420
III The Policy of Holding Wheat	424
IV European Reactions to Producer Difficulties	426
V The Position of Russia	430
VI Over-Production or Under-Consumption	433
VII Future of Canada's Export Trade	434
VIII Canada's Principal Customers	437
IX The Future of the Grain Trade	441

CHAPTER XVIII.

THE UNDERLYING CONDITIONS OF PRODUCTION—	445
I The Western Farm Growing Area	445
II Western Canadian Climate	448
III Land Organization	454
IV Population	457
V Farm Management	458
VI Cost of Production	462
VII Mechanization	470
VIII Maintaining the Quality of Canadian Wheat	478
IX Soil Exhaustion and the Weed Menace	486

APPENDIX

THE HUDSON BAY ROUTE—	491
I The Test Shipments	491
II Features of the Route	492
III Limiting Conditions	495
INDEX	499

ILLUSTRATIONS

	PAGE
Steamer <i>Farnworth</i> loading at Churchill, September, 1931	FRONTISPIECE
Typical Country Elevator	88
Country Elevator (Longitudinal)	91
Typical Terminal Elevator, Port Arthur and Fort William, Ontario	119
Effect of Blending English Wheat with Manitoba Northern	436
Steamer <i>Warkworth</i> leaving Dock at Churchill, September, 1931	491

PART I



CHAPTER I

EARLY STAGES OF DEVELOPMENT

ALTHOUGH the Canadian grain trade has grown to really great dimensions only since 1900, its roots go back to the very beginning of Canadian history. Wheat is reputed to have been first grown on this continent in 1605 in the French settlement established at Port Royal, now Annapolis, in the maritime provinces. We learn of its introduction to Canada a little later. In 1616 Champlain writes of fine wheat being cut at Quebec for transportation to France. No doubt this wheat was being sent to the home country merely as a sample of the possibilities wrapped up in the colony.

Grain is a pioneer crop. The average amount of wheat consumed per head of population among Europeans is known to vary ordinarily from four and one-half to six or seven bushels. It is obvious, therefore, that the pioneer settler needs only a few acres placed under cultivation to provide for domestic requirements. As additional acres are cultivated, a surplus becomes available which may be used to procure by exchange the other necessities of life. Since many of these necessities are only produced in the older countries, grain would naturally be exported to pay for them. The usefulness of grain for this purpose is obvious since, as a commodity, it is relatively easy to store and to convey to market even under primitive conditions of transportation. Placed in bags of convenient size it can be carried without difficulty; nor is it apt to deteriorate in

quality if given suitable protection from wet and dampness. There are then, very good reasons why grain should soon appear in the short and simple annals of the early trade of Canada.

1. UNDER THE FRENCH REGIME.

The early French settlers secured a yield of wheat that ranged from nine and one-half to fourteen bushels per acre. This was spring wheat. Fall wheat was not cultivated, although by 1734 unsuccessful attempts were being made to introduce it. Along with wheat, the coarse grains, barley, rye, oats, peas and buckwheat, were being raised. As the settlement in New France grew, there arose a small and struggling trade in grain. This trade appears to have been based initially upon the fur trade and the North Atlantic fisheries. Supplies came from New France to support enterprises in these fields, and the exports of fur and fish brought from Europe in return those manufactured articles of which the colonists stood in need.

The trade suffered, however, from all the vicissitudes that usually beset a new agricultural community. While a good crop provided a surplus for market and for export, a bad crop made necessary the importation of wheat from France to supply the deficiency. As a matter of prudence, exports were usually made the summer after the crop had been harvested, that is, after the inhabitants had ensured a sufficient supply to carry them through the long Canadian winter, to provide seed grain and to maintain them until the new crop came in. But not infrequently when prices were high in the autumn, the habitant, yielding to a natural temptation, sold his grain at that time. In this way on occasions exports exceeded prudence and the little settlement was pinched in its supplies. Thus in 1715 Bégon, the

Intendant, reported to the French minister that too much had been shipped out of the colony.

The early shipments were made to Ile Royale (Cape Breton), and to Plaisance (Newfoundland). The French had established posts there and they drew supplies of wheat and flour from Canada to maintain their garrisons and their fisheries. Apparently some small shipments of flour were also made to the French West Indies before the close of the seventeenth century. Later, an occasional shipload of wheat was probably carried to France, although France at this time normally did not require grain importations to feed her population. Nevertheless, we find Vaudreuil and Raudot reporting to the King of France in 1709, that the "quantity of flour sent last year (1708) to Plaisance, the Islands, and France was 958,955 pounds." They state, however, that the colony "is not well enough settled as yet to supply France in time of scarcity."

From the beginning of the eighteenth century there is evidence of the growing importance of the grain trade to French Canada. Between 1719 and 1734 the production of wheat increased from 240,000 to 738,000 bushels. In the latter year the oat crop amounted to 163,000 bushels. Sorel and the Richelieu valley were especially noted for the quality of their wheat. By 1754 the export of wheat had grown to 80,000 bushels annually. Apart from Cape Breton and Newfoundland the surplus was absorbed by the French West Indies, the trade being strictly controlled by royal ordinance. Much of the surplus that was shipped to the Indies was transported in the form of flour and biscuits. Early census figures show a growth in flour mills in New France from 9 in 1665 to 118 in 1734.

During the last decades of the French regime the trade became disorganized. This was partly due to the war, which

cast a dark shadow over the colony and cut off certain markets, notably Louisburg, in 1745. Moreover, the internal administration of trade was bad and not calculated to encourage the habitant to produce more than was necessary for himself. Bigot, the French Intendant, was involved in the manipulation of prices, and this was fatal to increased production. His arbitrary regulations towards the end of the period led actually to a decrease in cultivation, and when the colony passed into the hands of the British it could scarcely supply its own needs.

II. EXPORTS TO GREAT BRITAIN.

After the occupation of Canada by the British it took the country some little time to recover from the effects of the war. But a surplus available for export soon re-appeared. In 1768 shipments of wheat to the West Indies amounting to 23,962 bushels are reported. In 1770 exports had increased to 51,822 bushels, and included shipments not only to the West Indies, but to Great Britain and the American colonies. The statistics of the trade of Quebec record a consignment of six bushels to Great Britain in 1768. In 1770 this was followed by shipments of 3,539 bushels; and in 1771 shipments had increased to 50,085 bushels. It is evident that we have here the modest beginnings of the grain trade with Great Britain. With the installation of better flour mills in Canada, exports of flour also showed an increase.

This trade included not only Great Britain but also shipments to the Mediterranean. Writing in 1787 Alexander Davidson declares that "every port in the Mediterranean will testify to the goodness of Canada wheat." The same writer refers to the grain trade to Portugal and to Spain which, he says, had always been favourable to the province. "Our imports of wine and fruit is but small when compared

with our export of wheat. The balance produce of our cargoes is either remitted to Britain in cash or in wines and fruit for the London market, and consequently serves as a remittance for the merchants of the province to their English correspondents." This affords an interesting example of triangular international trading, and of the resultant advantage to Canada. It was estimated that shipments of from 25,000 to 30,000 bushels of wheat would purchase most of the wines required in Canada. The Spanish and Portuguese imports consisted wholly of wheat, as their regulations reserved the production of flour to their own mills.

— The volume of exportations from Canada had increased steadily up to 1774 when it reached a total of 460,818 bushels. Of this the West Indies took 383,438 and Great Britain 76,376. The trade then fell away rapidly until by 1780 it had practically ceased to exist. This abrupt decline was due partly to events arising out of the American War of Independence, such as the invasion of Canada in 1775, and partly to bad crops. Further, as a result of the war, American privateers made their way into the Gulf of St. Lawrence and preyed upon shipping. Among other depredations, the capture of a vessel loaded with flour is reported by the Lieutenant-Governor of Gaspe in 1778. It is possible also that the British forces operating in the northern American colonies drew some supplies from Canada. Finally, bad crops, high prices and attempts of the merchants to corner the market led to an ordinance signed by Governor Haldimand, March 9, 1780, prohibiting, for a limited time, except under special license, the export of wheat, pease, oats, biscuits or meal. The object set forth was to reduce the price of wheat and flour in Canada. This was followed a month later by a second ordinance directed against "forestallers and regraters" of wheat and flour.

The colony was severely hit by a severe crop failure in 1788. It was estimated that less than one-half of the usual quantity was produced. In June, 1789, a report to the Privy Council at Quebec stated that an importation of at least 30,000 quintals of flour was necessary to carry the country over until the new crops matured. Orders were sent to England by way of New York to meet the emergency. In 1790 another ordinance was passed forbidding exports from the colony on the grounds that "a scarcity may be apprehended."

Apparently it was during these years that the West Indies trade was largely lost. In a report to the Quebec Legislature in 1787, it was stated that the West Indies would give preference to the flour produced in the United States, as they were accustomed to it. Later on, in 1821, in a Petition on Agricultural Distress from the merchants of Montreal and Quebec, it was reported that while the West Indies market was open it was "so glutted with foreign flour as almost to have annihilated the demand for that of Canada."

In one way or another by 1793 a market was found for Canadian grain. The extent and magnitude of the traffic may be gauged from the following table giving the exports from the Port of Quebec from 1793 to 1820. It will be noted that shipments from year to year varied greatly. This is partly explained by the fact that with a small area under cultivation, abnormal weather conditions tended to act equally upon the whole crop, and thus either to reduce or enhance the total amount harvested. The period covered by the table includes the Napoleonic wars in Europe and the war of 1812-5 between Great Britain and the United States. The effect of the latter struggle upon this phase of Canadian trade is clearly visible during the years it was in

progress, by the absence of wheat exports, and greatly reduced exports of flour and the coarse grains.

SCHEDULE A

A table of the total exports of Wheat and other grain and of Flour and Biscuits from Quebec (the only port of Entry and Clearances in the Canadas) from the year 1793 to 1820 inclusive:

Year	Quarters Wheat	Barrels Flour	Quintals Biscuits	Bushels Pease	Bushels Barley	Bushels Oats
1793	60,887	10,916	9,822	180	-----	3,043
1794	51,819	13,787	15,047	832	-----	1,135
1795	49,344	17,967	19,722	3,189	-----	-----
1796	396	4,352	3,882	271	-----	1,490
1797	3,928	13,932	8,147	1,226	-----	-----
1798	11,466	9,530	12,165	3,244	6	2,715
1799	16,109	14,475	21,538	495	70	476
1800	27,141	20,271	24,623	3,193	1,382	5,517
1801	59,059	38,146	32,303	6,559	3,744	5,013
1802	126,254	28,301	22,051	424	5,585	1,898
1803	45,946	14,432	17,581	1,603	450	1,460
1804	25,193	14,319	21,255	286	4,253	2,981
1805	2,752	18,590	26,462	4,155	6,911	5,012
1806	12,114	10,997	23,659	6,191	5,158	2,734
1807	28,943	20,442	28,047	7,181	5,010	2,369
1808	23,338	42,462	32,587	52,934	5,994	2,669
1809	24,777	20,726	35,860	60,776	3,478	7,540
1810	21,363	12,519	16,467	18,928	16	866
1811	107	19,340	13,063	4,487	-----	1,016
1812	32,897	37,652	19,237	22,384	-----	1,098
1813	-----	517	279	3,082	-----	-----
1814	-----	1,217	384	-----	-----	519
1815	-----	1,920	1,296	188	-----	-----
1816	-----	1,137	456	169	-----	613
1817	18,208	38,047	14,085	3,754	-----	15,751
1818	50,224	30,543	8,461	49,637	12,967	6,049
1819	4,737	12,086	11,256	10,861	2,087	1,082
1820	39,881	45,369	8,732	3,152	628	3,700

If we combine with this information a record of the ports to which grain was shipped, we obtain some idea of the Canadian grain trade as it existed at the beginning of the nineteenth century. Between April 5 and July 5, 1802, twenty-nine vessels cleared from the Port of Quebec with wheat. Of this number six sailed for Barcelona, five for Hull, three for Cork, three for "Cork and a market," two each for Halifax, Bristol and Liverpool, and one each for Greenock, Cadiz, Sunderland, Newfoundland, Newfoundland and Jersey, Madeira and Leghorn. The previous table of exports shows that the volume of wheat exported in 1802 was more than twice as great as in any other year for which figures are available. This was partly due undoubtedly to conditions arising from the war with Napoleon. The wide distribution of ports is of interest since it shows how Canadian wheat at this early date was establishing a place for itself in foreign countries.

III. STRUGGLE AND GROWTH.

Between 1820 and 1850 the export trade in wheat and flour exhibited intermittent growth and fluctuating development. A variety of causes conspired to hinder a smooth, regular advance. In the first place there were a number of years when physical conditions made the crop actually harvested relatively small. In 1829 the wheat midge appeared in Lower Canada. The habitant had also to contend with rust, and in 1841 the farmers of Lower Canada did not produce sufficient wheat to meet the requirements of their own province. In 1849 the midge was also found in the eastern part of Upper Canada and became a scourge. The export of wheat in 1855 was 9,390,531 bushels, but owing to the ravages of the midge the quantity in the next three years declined over fifty per cent. In 1859 it was estimated that

the loss from the inroads of this insect amounted to \$2,500,000. In the second place, the political disturbances which culminated in the rebellion of 1837 naturally created conditions detrimental to trade and commerce. Exports of wheat to Great Britain practically ceased for a period of four years, while the value of the total exports of grain fell from £139,742 in 1834 to £15,331 in 1837, rising again in 1840 to £494,507. In 1846 it stood at £696,078. Then again, the restrictive duties imposed by the British government in the interest of the home growers created uncertainties which made the export trade to the mother country very hazardous. It was quite impossible to estimate with any accuracy the profits to be expected upon a shipment. In many instances losses were endured. The protective duties in Great Britain were levied at a rate inversely to the price of wheat, and prices there tended to fluctuate with the domestic yield. Between 1820 and 1825 Britain enjoyed good harvests, and her imports were insignificant. Then there followed several years of unsatisfactory harvests and higher prices, the duty upon wheat imported into the country was lowered, and there was again an opportunity for colonial wheat to enter into the trade. The colonies enjoyed some preference over foreign exporters in the British market, but despite this concession, the exporters from North Germany appear to have been more favourably situated in the market, because of the distance that colonial wheat had to be transported.

But in 1843 a decided preference was granted. Canadian wheat and flour were admitted to British markets at the nominal rate of duty of one shilling per quarter. Since a British statute had enacted that all manufactured goods should be deemed to be the produce of the country in which they were manufactured, it became possible for Canadian millers to import American wheat, upon which there was a

Canadian duty of three shillings per quarter, and manufacture it into flour for export to Great Britain, where it would only encounter a nominal duty as a Canadian product. It was calculated that this gave the Canadian millers a preference of six shillings a quarter over American competitors. It was also possible for Canadians to ship out all their home grown wheat, and take care of their domestic requirements by importation from the United States. As a result of this preference there was a stimulus to increase exportation of flour and wheat to Great Britain. The actual figures for export to Great Britain from Canada following this concession are undoubtedly influenced by importations of wheat from the United States.

The advantages that Canada possessed were not long enjoyed. The repeal of the Corn laws in 1846 struck a severe blow to the Canadian wheat and flour trade, and was received in Montreal, the centre of this trade, with dismay, almost with despair. The effect on the Canadian grain trade of the loss of the preference may be inferred from the official British reports of colonial imports, mainly Canadian, of grain. In 1847 the amount reported is 802,240 bushels, in 1848, 260,480 bushels and in 1849 the low total of 203,208. During these years foreign grains imported into Great Britain increased from 20,445,384 bushels in 1847 to 30,559,816 bushels in 1849. American producers especially benefited by the repeal of the Corn laws since at this period it was estimated to be cheaper to ship for export by the Erie Canal to New York than down the St. Lawrence to Montreal. The advantage was placed at twelve and one-half per cent.

The question arises: where did Canadian grain go to? How much was actually squeezed out of the desirable British market? William Cayley, the Inspector-General for

Canada, states the Canadian trade in grain during these years to be, as follows:

Year	Bushels Wheat	Barrels Flour	Bushels Barley & Rye	Bushels Oats
1847	719,688	670,808	25,332	168,672
1848	535,062	660,624	14,756	49,396
1849	1,002,269	490,335	27,381	348,773

The absence of really reliable statistics hampers any exact answer to the question, for some Canadian grain passing through the United States for export was credited, when it reached Great Britain, to the United States. It is possible too, that more grain was being absorbed by the Mediterranean countries, where, as we know, Canada had already built up a connection.

In so far as flour is concerned, one market re-entered was that open in the maritime colonies. This trade had been largely left to the United States when conditions in Canada were favourable for shipment to Great Britain. It is known that the Canadian millers now began to compete actively in Nova Scotia and New Brunswick against the Americans. In 1846 Canada shipped 35,152 barrels of flour to the maritimes, compared with American shipments of 310,091 barrels; but by 1850 Canadian shipments had reached 140,872 barrels, while American shipments had fallen to 214,934 barrels.

Despite the vicissitudes of pioneer cultivation, wars, and changes in trade policy, the production of wheat in Canada continued to increase. This increase was due to the colonization of Upper Canada. Very soon after the American revolution had forced the United Empire Loyalists into the Ontario wilderness, a surplus of wheat began to appear in that province. Once again the pioneer turned to wheat to main-

tain himself. The first clearings made by the English speaking people occurred in the Niagara district in 1780. Here in 1781 spring wheat was sown. In 1783 winter wheat was sown, and in 1784 was introduced into the Kingston district. These dates represent the introduction of wheat into Ontario by the English speaking settlers. It is considered probable, however, that the very first wheat grown in the province was cultivated in a French-Canadian settlement in what is now known as Essex County. At any rate as early as 1792 we find the inhabitants of Upper Canada making representations to Governor Simcoe on the subject of transporting wheat and flour to Lower Canada. The petitioners reported an abundant harvest and that it appeared probable there would be "a very considerable quantity of wheat and flour to export to Montreal." These settlers, because of their remote situation, shipped their surpluses under conditions of considerable difficulty. The great obstacle, of course, was the absence of convenient means of transportation. They estimated the cost of carrying a bushel of wheat from Kingston to Montreal to be from one-fourth to one-third of the whole value of the commodity, according to the prices ruling. At some points in Ontario the farmers had a local market at the military posts, where they were given what amounted to a subsidy, being paid for wheat at the price it would cost to import it into the settlement.

Just as in the case of the habitants of Quebec, the pioneer farmers of Ontario encountered crop failures and other disasters. In 1794 and 1795 they had to contend with the Hessian fly and with drought. In the latter year Simcoe reported that it would be only with great difficulty that the province would supply its own flour, and that it might even be necessary "to lay an embargo on flour, wheat or other

grains being exported into Lower Canada." In the spring of 1796 it became necessary to purchase seed wheat. We have already referred to the effect of the war of 1812-5 and the rebellion of 1837 on trade, and to the destruction at later dates of wheat crops by the midge.

Nevertheless, wheat was early recognized as the staple crop of Upper Canada. As the province developed the acreage devoted to wheat grew. Its production presently came to exceed that of the older settled province of Quebec. In 1842 there was a production of 3,221,989 bushels, ten years later this total had increased to 12,682,550, and in 1860-61 amounted to 24,620,425 bushels. Meanwhile, wheat production in Lower Canada, after reaching 3,407,756 bushels in 1831, showed a tendency to decline. In 1850 the total produced amounted to 3,073,943 bushels; in 1860 to 2,654,354 bushels. The farmers of Quebec were hard hit for a series of years by bad crops, rust and the wheat midge. They turned to less precarious forms of cultivation. In Ontario, winter wheat was successfully grown and soon became much more important than spring wheat. In Quebec on the other hand winter wheat never achieved more than a very limited success, and spring wheat was the principal variety found capable of successful cultivation. The growth of the Canadian grain trade in the second quarter of the nineteenth century was thus due to the opening up of Ontario rather than to expansion of cultivation in Quebec. A new army of pioneers found in the cultivation of wheat the means to provide themselves with those necessities of life that could not be wrung directly from the frontier.

IV. PROSPERITY AND HARD TIMES.

Between 1851 and 1890 the cultivation of wheat in Upper Canada assumed its greatest relative importance. The

history of the development of the grain trade during these years is connected with wheat production in Ontario. In 1851 the area devoted to wheat amounted to 798,275 acres with a harvest of 12,682,550 bushels. In 1861 the acreage had attained to 1,386,366 acres and the yield had increased to 24,620,425 bushels. In 1871 the area under wheat was 1,365,872 acres. In that year a relatively poor crop yielded a harvest of only 7,891,989 bushels of spring wheat and 6,341,400 bushels of winter wheat, or an average of slightly over ten bushels to the acre.

As early as 1857 it had become apparent that in Upper Canada, just as in Lower Canada, the area really adapted to wheat raising was comparatively limited. The explanation is that Ontario was slowly emerging from the early pioneer stage. The situation gradually became acute. In 1880 evidence was submitted to an agricultural commission appointed by the government of Ontario that fall wheat was seriously declining in yield and that spring wheat had "been of late literally a failure all over the country." The census of that year, however, reported 1,930,123 acres devoted to wheat and a yield of 27,406,091 bushels. In 1882 the yield was estimated to be 40,921,201 bushels. But by 1890 there was a reduction of acreage to 1,321,854. Meanwhile, the acreage sown to wheat in Quebec, which had risen to 410,043 acres in 1851, had fallen to 223,176 acres in 1880. The decline in wheat acreages in Quebec and Ontario has continued up to the present. The average annual area sown to wheat in Ontario for the years 1924-28 was 856,228 and in Quebec 63,800. The average annual yield for the latter province of wheat for the same period has been 1,078,800 bushels of spring wheat, and for Ontario 22,491,060 bushels, winter wheat accounting for approximately 20,000,000 bushels, the balance being spring wheat. Ontario continues to produce a

small export surplus, but Quebec has become a deficiency province, and must rely for part of her domestic requirements upon the west.

The rapid expansion of wheat acreage in Ontario between 1851 and 1861 owes something directly to the high prices which ruled between 1851 and 1857, but the expansion was also due to a number of circumstances which encouraged immigration into Canada and consequently, the colonization and settlement of the province. Within Canada, the building of the Grand Trunk Railway and other railway lines gave employment and distributed prosperity where construction was taking place, opened up new territory, and improved the means of transportation. The Crimean War, 1853-56, created an additional demand for foodstuffs in Great Britain, and prices rose in consequence. On the other hand, throughout the whole decade the ravages of the wheat midge reduced the yield. In 1857 losses from this pest were placed at \$8,000,000. Following the business crisis of 1857 there was a sharp fall in prices in England. Between July, 1857, and February, 1858, wheat declined from nine shillings per bushel to four shillings and sixpence per bushel. Naturally, this caused serious difficulties to Canadian exporters, and led to severe distress among the farmers of Upper Canada.

In 1854 there was negotiated the Reciprocity Treaty with the United States. Between 1854 and 1866 the absence of restrictive duties on agricultural products between the two countries made possible considerable intersectional trade. But the particular point to be noted is that within this period, from 1861 to 1865, the American Civil War was in progress. The treaty allowed Canadian farmers to benefit to the full from the high prices and the ready market which existed as a result in the northern states. The high peaks of prosperity, which rewarded the labours of the Canadian

farmers in the 'fifties and in the 'sixties of the last century, coincide with the Crimean War, which gave a good British market, and the American Civil War, which raised prices, and not only enhanced demand in the United States, but reduced American export to foreign countries.

The trade statistics for the period are by no means clear or complete, but it is possible to point out certain developments in the evolution of the trade. An important feature was a shift in the trade route of Canadian export grain to American channels. Before 1847, grain exported from Upper Canada, which had become the chief source of Canadian supplies, passed through Montreal on its way to foreign countries. There were no shipments into the United States for export, or next to none. But in that year the bonding system was established between the United States and Canada. This gave Canada access to the Atlantic seaports of the United States when her own were closed, and opened the St. Lawrence to American shipments during the summer. As a result of the bonding privilege Ontario was no longer restricted to the St. Lawrence route, but was able to ship her exports from American ports. Thus began that flow of Canadian grain to the American seaboard which has continued down to the present day.

This deflection of exports to American channels, which was not at the outset eased by the free interchange of products under the Reciprocity Treaty, added to the difficulties of Montreal, which was already suffering from the losses incurred by the repeal of the Corn Laws in Great Britain. Even after the Reciprocity Treaty had gone into effect, Montreal continued to feel the powerful competition which the Erie Canal offered. In 1858 Hon. John Young, Chairman of the Montreal Harbour Commission, in a report upon rival routes to the ocean, pointed out that in 1856, 4,362,329

bushels of wheat, flour equivalent in wheat to 1,707,990 bushels, and 735,341 bushels of other grain, in all a carriage of over 6,000,000 bushels, had gone from Upper Canada to the United States. In 1857 the movement was placed at 4,492,963 bushels. The significance of these figures appears in the statement that the exports from Canadian lake ports to the United States lake ports exceeded "the whole of the receipts at Montreal, which include receipts both by railway and canal and all that comes from the United States and Canada West." In 1858 "during the four weeks ending the thirty-first of October, the quantity of Canadian wheat received at the port of Oswego alone was 670,000 bushels, whilst the wheat receipts of Canadian wheat by canal and river at Montreal from the opening of navigation to the same date was only 104,677 bushels." Montreal shipments of grain, in fact, did not begin to grow, apart from the civil war period, until a heavy compensating flow of American grain from Chicago and the western states began to appear about 1870.

The breaking of bulk by the lake steamers at the foot of Lake Ontario, whether the cargo was destined for Montreal, or for Oswego and the American route, gave Kingston an important position for a time in the grain trade. With a good harbour, Kingston served as a transfer point where the canal boats met the larger lake vessels. The transfer was accomplished by floating elevators which had come into use somewhat earlier. The original location of the firm of James Richardson and Sons, so well-known in the Canadian grain trade, was in Kingston, and its beginning dates from this period.

The Reciprocity Treaty was important in giving free play to intersectional trading to suit the convenience of each country. In 1863 Canada imported 4,210,900 bushels of

wheat, and exported to the United States 1,400,000 bushels. Flour imports amounted to 225,439 barrels and exports to 490,000 barrels. Canadian wheat is reported as being shipped across the lakes, while Canadian imports came chiefly through the Port of Kingston. Obviously this was a trade of convenience; both countries produced wheat, and no striking advantages could be expected in the course of trade. Flour ground in Canadian mills supplied part of the requirements of the New England States. On the other hand the Maritimes drew supplies from the United States.

Yet while the Reciprocity Treaty and the Civil War did not lead to a large increase in wheat shipments to the United States, one result of the war was to curtail American exports to Europe, and thus allow the Canadian trade to expand in that direction. Shipments of wheat from Montreal in the years immediately preceding the outbreak of the war averaged about 500,000 bushels per year; but while the North and South were at grips the average became 4,000,000 bushels. The greatest volume occurred in 1862 when exports of wheat from Montreal totalled 6,500,796 bushels. Exports of flour increased from 277,567 barrels in 1860 to 855,071 barrels in 1864. After the close of hostilities there was a sudden drop in the volume of exports, much more severe with wheat than with flour. Once again Montreal encountered a period of lean times but, as previously noted, by 1870 exports of American grain began to exert an influence upon the traffic of the port.

Aside from wheat and flour during the period that reciprocity was in force, there were greatly increased shipments of barley and oats. In 1865 the United States imported oats to the value of \$2,216,722. This trade, however, practically disappeared in the next few years. It was obviously only an incident of the demands created by the war. The trade in barley had a longer duration. While the period between

1854 and 1866 on the whole was a period of general prosperity for the Canadian grain trade, it is necessary to realize that this prosperity was only one phase of the good times that prevailed generally in Canada. The Civil War created a need for all kinds of farm products. Apart from grain this especially affected the demand for live animals and wool.

The prosperity of the 'sixties was followed by a period of low prices and of hard times for the Canadian farmer. For a while the grain trade actually lost ground. The rapid development of the American west brought a new pioneer belt into the field of supply, and the feverish construction of railways and improvement of waterways enabled this west quickly and cheaply to throw its surplus on the markets of the world. Wheat prices fell to a level which made it unprofitable for the Ontario farmer to rely upon it as his main product. The London market for wheat reached its lowest level for a century. This decline in prices hastened a movement in Ontario for the raising of live stock, and later for dairying.

The growing of barley in Canada in fairly large volume, however, continued to be profitable until 1890. It was estimated that Ontario barley made better beer than that grown in the United States. In 1855 American imports of Canadian barley amounted in value to only \$90,822, and rose to nearly \$5,000,000 by 1865. The abrogation of reciprocity did not check this trade, and the production of barley rapidly increased in Ontario. In 1885 the barley harvest was placed approximately at 16,500,000 bushels, an amount greater than that grown in any state of the American Union. Exports of barley in the high year of 1886 were valued at \$7,175,379. In 1890 shipments to the United States totalled 9,975,908 bushels valued at \$4,600,409. The two chief ports of entry were Oswego and Buffalo. The year 1890 marked the beginning of the end of this trade, for the heavy duty imposed

by the McKinley Tariff cut down the exports to the United States. Efforts were made to gain a footing in the English market but they proved a failure, and in 1892 the area under barley in Ontario was 202,101 acres less than in 1890.

The grain trade of Canada before the opening up of Manitoba and the Northwest was of very modest proportions and not of great importance to the outside world. Indeed, with the immense volume that is now annually shipped abroad it is easy to forget all about it. But it was a trade of great value to the sturdy pioneers who first settled in Quebec and Ontario, since it gave them a surplus product which could be produced without large capital, and which yielded cash returns. Combined with the manufacture of flour for export, the trade opened a field of enterprise to business. In this connection there should also be mentioned the development of the brewing industry. It is not without significance that from these fields of enterprise there was drawn a group of able and far-sighted executives who took a prominent part in the organization of banking institutions for Canada, and in shaping the future destinies of the young Dominion.

Nor was the experience gained in the grain trade in Ontario and Quebec without influence upon its organization when it assumed larger proportions in the west. Before the west was settled, improved varieties of wheat had come into use, the handling of grain in bulk through elevators, particularly at the ports, had become practice, a system of standards, grading and inspection had been devised. Much of this advance in methods was drawn from the example of the United States, but it was first worked out and applied in this country in Ontario and Quebec. By the time that the west had produced an available surplus, the technique of handling grain for export was well understood in Canada.

CHAPTER II

THE OPENING UP OF MANITOBA

WHILE low prices for wheat in the world's markets and prohibitive tariffs against barley importations into the United States were driving the farmers of Ontario into the production of live stock and of dairy products, the extension of railways beyond the Great Lakes was opening up to the settlers of Manitoba the possibilities of an export market for their grain. The expansion of grain growing on the western plains of Canada, long delayed, was now on the point of beginning. This expansion has continued up to the present day.

I. THE SELKIRK COLONISTS.

The first farmers who followed the railways into the west had to endure many of the discomforts which attend the opening up of new territory, but they did not come into a wholly unknown country. They had at their disposal the experience gained by the Selkirk colonists, who had been in Manitoba for two generations. In 1812 Governor Macdonell cleared land near Fort Garry for winter wheat. Winter wheat on the Red River, however, did not prosper, but in 1815 the first successful harvest of spring wheat in the west was taken off the land. In the years that followed, the Selkirk settlers had to live through many disasters and difficulties. In 1818 and in 1819 their crops were destroyed by grasshoppers. In 1820 the country was still suffering from this plague, and no land was cultivated. In 1826 and in 1852 and 1861 great floods submerged the settlement and

prevented crops from being sown until as late as June twentieth. In 1857, 1858, 1864 and 1867 there were plagues of grasshoppers. In 1868 this pest destroyed the entire crop and starvation was only averted by aid supplied from England, Canada and the United States to the extent of £7,500. The money was applied to the purchase of wheat and flour which was brought in on sleds from St. Paul. Again in 1875 a visitation of grasshoppers destroyed the wheat crop, and seed had to be imported from Minnesota. Many took a pessimistic view of the future of the country. In 1868 even Bishop Taché, who knew the west well, referred to the difficulties in the way of colonizing "the few points in this vast territory capable of cultivation." As late as 1906, Professor Mayor, professor of Political Economy at the University of Toronto, made a very careful survey of the West for the British Government, with special reference to future prospects of wheat growing. He concluded that "very great improvements in the productive power of the country, and a very considerable increase in the effective population, as well as a more exclusive regard to wheat cultivation, would have to take place before the North West could be regarded as being in a position to be relied upon to produce for export to Great Britain a quality of wheat even nearly sufficient for the growing requirements of that country."¹

The Selkirk colonists were separated from the other settlements in America. Their outlook was turned to the north and their means of communication with the mother country were precarious and difficult. By 1831 their harvest in a normal year yielded a surplus over domestic needs, but their only available market was the Hudson's Bay Company which was capable of absorbing at most a very limited

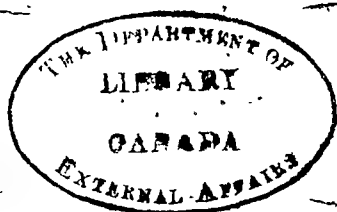
¹Cd. 2628, 1905 p. 114.

amount. In 1851 Governor Ramsey, of Minnesota, after a trip north reported that the Red River settlers were raising so much, and had such a restricted market that they were, metaphorically speaking, "smothering in their own fat." The settlement had become in fact merely an auxiliary of the fur trade. In 1836 an import and export duty of $7\frac{1}{2}$ per cent had been levied on any goods that might be exported to or imported from the United States. Under all the circumstances it is not very surprising that the colony made little growth. In 1849 it had a population of 5,391 and there was under cultivation only 6,392 acres, or less than ten sections of land. The settlement languished until the west became part of the Dominion of Canada, and secured railway connections with the east. In 1870 the white population of Manitoba was 12,228.

II. THE FIRST SHIPMENTS.

During the decade between 1870 and 1880 the fine quality of Manitoba wheat gradually received recognition. The reputation it had already secured resulted in a shipment to Ontario in the autumn of 1876 to improve the quality of seed in that province. In that year there had been a serious failure of the spring wheat crop in Ontario, which was attributed to defects in the seed sown. This led R. C. Steele, of Steele Brothers, founder of the Steele, Briggs Seed Company, Toronto, to visit Manitoba with a view to procuring 5,000 bushels of her finest wheat for use as seed in Ontario, but he only succeeded in procuring $857\frac{1}{6}$ bushels in Winnipeg in time to be shipped south via the Red River before the steamers ceased running for the winter.

The wheat was carried by water to Fisher's Landing in Minnesota and was shipped from there by rail to Duluth, together with 4,000 bushels selected wheat purchased in



northern Minnesota. From Duluth shipment was made by vessel to Sarnia, and from thence by rail to Toronto. By this roundabout way it reached its destination. The Winnipeg consignment was purchased at 85 cents a bushel, and placed in 412 sacks which cost 26 cents each. The total cost of carriage to Toronto from Winnipeg was 35 cents per bushel, the rate to Duluth being 24 cents, and from Duluth to Sarnia, five cents per bushel. It is worth noting that this first shipment out of the west was not of the ordinary commercial character, since the grain was intended to be used for seed rather than to be ground into flour and consumed. That Ontario, in a situation that was felt to be critical for spring wheat farmers, should turn to the west for a superior quality of seed, which in the first instance had come from the eastern province, is striking evidence of the repute in which Manitoba wheat was already held.

In 1878, 1,100,000 bushels of wheat were harvested in Manitoba, a quantity far beyond the domestic requirements of the province. The need for an outlet became more and more pressing. In 1879 Winnipeg obtained rail connections with Minneapolis and commercial shipments began to move south. In 1880 the whole surplus was purchased by American buyers from Minneapolis at prices higher than was paid for the Dakota wheat nearer home. The explanation is to be found in the high quality of the wheat—"rich in gluten"—which made it especially desirable for mixing with the softer Minnesota wheat. For the years 1877, 1878, 1879 and 1880 the average yield in Manitoba was 26 bushels per acre. The weight of the heaviest samples was 66 pounds per measured bushel compared with 65 pounds for the heaviest American wheat. Thus from the very outset, when Manitoba wheat became available, it achieved a high reputation for strength and excellence.

The first shipment of grain from Manitoba to Great Britain appears to have occurred in 1878. There is a record of a shipment of grain in that year by Robert Gerrie to Barclay and Brand, of Glasgow. In 1879 a consignment of wheat was sent to Liverpool. This wheat was grown by Edward Davis of Emerson, Manitoba, and was purchased and shipped by Duncan Mathewson. Both these shipments went up the Red River to connect with the railways in the United States.

But the important step in linking the west with export markets was the completion of the Canadian Pacific Railway line between Winnipeg and Port Arthur. In 1883 the contractors turned over the last section of the railway in this territory to the company, and the handling of wheat to the head of the lakes for shipment on vessels commenced. Construction of the first elevator by the Canadian Pacific Railway was begun the same year, but it was not completed until early in 1884. In the meantime, however, sufficient grain had been forwarded for a cargo, and the first lake shipment was made on the steam barge *Erin*. As no facilities existed at Port Arthur for the handling of bulk grain direct from the cars, spouts were first tried to place the grain upon the vessel. These did not work successfully, and wheel barrows and manual labour were employed. Finally, however, carts were requisitioned, which were driven to the vessel and the contents dumped into the hold. The cargo was completed with sacked grain and totalled 10,000 bushels. James Richardson & Sons are credited with having shipped the first cargo taken down the Great Lakes from the Canadian head of navigation. Approximately 1,500,000 bushels of grain were handled during the first crop season. In 1884 the first elevators of the Canadian Pacific Railway were available, and grain began to move out to the east under

modern conditions of handling. In this year the schooner *Sligo* carried the first cargo from Port Arthur delivered direct from an elevator.

The first export from the west to Great Britain by an all-British route was made by Thomas Thompson, of the firm of Thompson and Sons, later of the Winnipeg Grain Exchange but then residing in Brandon. This shipment consisted of 1,000 bushels of No. 1 hard wheat in sacks and went via rail to Port Arthur, then by boat to Owen Sound, and then by rail and ocean to Glasgow, arriving there in the record time of 21 days from Brandon.

In December, 1885, the first carload of western wheat grown in Manitoba left Winnipeg by railway for Montreal. Thus by 1885, with both lake and rail connections between east and west, the way was opened for a larger export trade in Canadian grain, based on western supplies.

III. INCREASED PRODUCTION IN MANITOBA.

The period between 1885 and 1900 pivots on Manitoba, the first of the prairie provinces. Although the Canadian Pacific Railway, by its line across the plains through the Rockies to the Pacific coast, had made much fertile country available, the settlements in the northwest territories were small and far apart. The exportable surplus of grain was drawn mainly from Manitoba. Between 1880 and 1885 the production of wheat in Manitoba increased from 1,033,673 bushels to 6,711,186 bushels; barley from 253,604 to 1,054,234 and oats from 1,270,268 to 4,740,947 bushels. In 1890 the yield of wheat had grown to 16,092,220 bushels; of barley to 1,452,433 bushels, and of oats to 8,370,312 bushels. There was continued development between 1890 and 1900, but the season of 1900 was very dry and the yield for that year was materially reduced so that a comparison of the harvest of

1900 with the harvest of 1890 gives a misleading impression of the really great extent to which growth had taken place. In 1900 the Manitoba wheat harvest yielded 18,353,013 bushels, barley 2,666,803 bushels and oats 10,592,660 bushels.² But the acreage under crop to these cereals had more than doubled during the decade, being 1,209,338 acres in 1890 and 2,678,730 acres in 1900. Bumper crops followed 1900. In the two succeeding years the wheat harvests in Manitoba alone exceeded 50,000,000 bushels. In 1900 the wheat grown in the territories amounted to 5,103,972 bushels, barley to 474,554 bushels and oats to 6,061,112 bushels. The total volume of grain at this time produced in Manitoba was approximately two and one-half times as great as that produced in the territories.

Increased production was accompanied by the development of increased facilities for handling. In 1883 the terminal elevator capacity at the head of the lakes was 250,000 bushels. In 1892 it was 4,500,000 bushels and by 1902 had grown to 7,750,000 bushels. In the country, flat warehouses were being made over into horse power elevators, or were giving way to elevators of standard construction. For a number of years facilities for the handling of grain at country points were poor, but after 1887, in which year the crop was unexpectedly large, the number of elevators greatly increased. In 1895 George Parkin, who made a trip through southern Manitoba, refers to seeing little towns springing up every ten or twelve miles, each equipped with two, three or four elevators. By 1900 the total capacity of the country elevators in the west was placed at approximately 12,000,000 bushels.

It was not until 1892 that exports of wheat from Canada began to show the influence of the western yield. The earlier

²*The Canada Year Book*, 1908, p. 85.

supplies drawn from the west apparently chiefly made good deficiencies in Quebec and the Maritime provinces. Although Canadian exports in 1887 exceeded 5,000,000 bushels, in 1890 they fell to only 422,274 bushels. But in 1892 wheat exports were up to 8,714,154 bushels, and on the ninth of November of that year Canadian wheat, "Manitobas", was quoted for the first time on the Liverpool market.³ Thereafter annual shipments fell below 8,000,000 bushels only once between that date and the close of the century. In 1898 wheat exports amounted to 18,963,107 bushels. In 1900 they were 16,844,650 bushels. The volume produced and handled shows great ups and downs, due to the vagaries of the weather affecting a relatively limited area of country. Periods of crop failures and of bumper harvests alternated in the history of the period. These conditions gave to the farmer and to the trader a feeling of instability and a sense of the precarious, speculative character of grain growing in the west. Nevertheless, the steady increase in acreage sown to crop revealed the predominance of optimism and of faith in the country that was now being opened up.

The following data compiled from reports and bulletins of the Department of Agriculture of Manitoba for Professor Mavor's report are quoted because they give a clear notion of the steady progress being made:⁴

³I am indebted to G. J. Broomhall for this information.

⁴Cd. 2628 p. 61.

Year	Acres	Yield	Bushels per acre
1883	260,842	5,686,355	21.80
1884	307,020	6,174,182	20.11
1885	357,013	7,429,440	20.80
1886	384,441	5,893,480	15.33
1887	432,134	12,351,724	25.70
1888	518,000	7,000,000	16.20 ^a
1889	623,245	7,201,519	12.40
1890	746,058	14,665,769	19.65
1891	916,664	23,191,599	25.30
1892	875,990	14,453,835	16.50
1893	1,003,640	15,615,923	15.56
1894	1,010,186	17,172,883	17.00
1895	1,140,276	31,775,038	27.86
1896	999,598	14,371,806	14.33
1897	1,290,882	18,261,950	14.14
1898	1,488,232	25,313,745	17.01
1899	1,629,995	27,922,230	17.13
1900 ^a	1,457,396	13,025,252	8.90
1901	2,011,835	50,502,035	25.10
1902	2,039,940	53,077,267	26.00
1903	2,442,873	40,116,878	16.42
1904	2,412,235	39,162,458	16.52

IV. ORGANIZATION OF THE TRADE.

By reason of its location, the city of Winnipeg, at once the chief trading centre of the province and the nearest important point on the prairies to the head of the lakes, was in a position to assume the leadership of the western grain trade. Up to this time the eastern provinces, where, as we have seen already, there was a small though well organized grain trade, held everything in its own hands. The first problem of the west was to secure recognition for western varieties of grain and for western traders. This meant the legal definition of grades of grain suitable to the western

^aEstimated.

^cSee page 29.

producers, representation on the board of examiners which met in Toronto to choose the samples which would be accepted as fulfilling the requirements of the various grades, and the appointment of official inspectors to grade grain according to the standards established. These necessities of the situation were gradually achieved.

In 1883 Winnipeg was added to the list of cities where the Board of Trade was entitled to appoint a Board of Examiners. The function of the latter was to examine candidates for the position of grain inspector, and to send representatives to the meeting of all the Boards at Toronto where the standards for the year were determined. In 1885 Port Arthur was granted a similar privilege. By the act of 1885 the various grades of Manitoba hard wheat and other grades for western wheat were established. Under a Dominion order-in-council the inspection of wheat in the west, and other arrangements connected with grain handling in Manitoba, were practically entrusted to the care of the Winnipeg Board of Trade. The Board of Examiners was a committee of this body, and in addition to other duties it devolved upon it each year to make a collection of samples of grain from the province from which to choose the standards for grading during the year. About the same time a grain inspector for the province was appointed, and then followed the selection of a deputy inspector for the city of Winnipeg. In 1888 the standards for Manitoba wheat recommended by the western members of the board did not meet with approval at Toronto, and the result was that no standards for Manitoba wheat were then made. Western interests protested that their interests were not being considered, and authority was granted by the department at Ottawa to the representatives of the boards of trade in Manitoba and the territories, including also that of Port

Arthur in Ontario, to meet annually in Winnipeg for the purpose of fixing the standards for all grains grown west of Lake Superior. This was a notable victory over the east. Finally, in 1890, it was decided that when disputes concerning grain grown in Manitoba or the territories occurred, the case should be brought before a Board of Arbitrators who would sit at Winnipeg. Previously all appeals had been carried to a Dominion Board sitting at Toronto. By these various measures the statutory regulation of the grain trade of the west came under local control.

The credit for securing these changes belongs for the earlier years to the Winnipeg Board of Trade, which included among its membership the grain dealers, millers and provision men. Later the Grain Exchange was formed and these two organizations worked together where western grain interests were affected. In the summer of 1883 an attempt had been made to form a grain and provision exchange in Winnipeg by those interested in these trades, but although organization was effected, when the autumn arrived and the time came to put it into use, interest in the project had declined and it was impossible to obtain even a quorum. However, in November of 1887, with a large crop in view and the growing certainty of extensive business during succeeding years, the idea of forming a grain exchange was again advanced, and this time the effort met with success. On the seventh of December, 1887, the Winnipeg Grain and Produce Exchange was formally opened in a room adjoining that of the Board of Trade. The latter expected that the new organization eventually would amalgamate with it, but the two bodies remained distinct. The exchange in its first year was composed of 100 members who paid a membership fee of \$100 each. In 1891 it was incorporated by an act of the province of Manitoba.

The avowed objects of the exchange were to centralize the grain business and to establish methods of conducting the trade. It carried out both these designs very successfully. In addition to defining trade terms and co-ordinating the various interests engaged in handling, selling and exporting grain, the exchange represented the trade where problems of general interest were under consideration. In 1888 it secured an extension of the bonding privilege to cover grain in cars sealed in Canadian territory for delivery at Duluth. The grain was received at the American port by a Canadian customs officer and "spouted" into a Canadian vessel for forwarding to points in Canada. This supplemented the privilege of shipping all rail bonded shipments through United States territory to eastern Canada.

In 1891 the general inspection act was amended to enable special commercial grades to be established when, by reason of the nature of the season, the crop might have special characteristics. In 1892 there arose a problem created by the increasing volume of Canadian grain seeking export through American ports. The establishment of Manitoba grades had increased the number of Canadian grades which the carriers were asked to handle. A railway committee, known as the Trunk Lines Committee on Canadian Grain, reported that it was an utter impossibility to handle grain under the old plan of preserving the identity of each lot. The committee insisted that all grain exported should be classified on some grading system. By a circular issued in October, 1892, Manitoba wheat was allotted three grades. Thus the grades numbers one, two and three hard became known at this time as the "export grades."

The problem recurred in 1897, when New York absolutely refused to provide for more than 15 grades of Canadian grain. At the request of the Trunk Lines Com-

mittee the exchange named as the export grades for western grain for shipment through New York and Boston, numbers one, two and three hard wheat, scoured one and two, number two white and number two mixed oats. However, on a request from Montreal, the grades scoured one and two, number three hard and number two mixed oats were made available to the east. This latter incident reveals the fact that the western grain trade was moving to the position of leadership, and its interests receiving first consideration.

In 1891 an act had been passed at Ottawa to make further provision for the weighing of grain, but action under the statute lagged. In 1895 the exchange petitioned the Department of Inland Revenue to appoint an official weighman. The petition was granted and in December of 1895, David Horn was appointed to the position. In 1899 a deputation to Ottawa secured the appointment of a Board of Survey, whose duty was to give final decisions on the grading of grain when disputes arose between the owner and the inspection official. In the same year the exchange and the Board of Standards, united to urge that all grain passing through Winnipeg should be inspected at that point, and warehoused at the head of the lakes or at other points upon Winnipeg inspection. This request was strongly opposed by the eastern interests, but the principle was incorporated in the new bill passed in that year. At the same time the exchange had urged that the fee system of remunerating grain inspectors should be discontinued and that these officials should be placed on salary. This change was secured, and David Horn was also made chief inspector for the Manitoba Grain Inspection District. At the same time the headquarters of the district was moved from Fort William to Winnipeg.

Meanwhile the exchange itself was progressing rapidly.

In 1888 it devised a telegraphic code for the use of members whereby the day's markets could be wired at slight expense. It built its own business block so that members could locate their offices convenient to the trading floors. In due course continuous telegraphic communications were established with other markets. In 1897 it took the important step of adopting rules relating to sales for future deliveries. This in effect established the futures market on a regular basis. It also compiled statistics. The growing importance of the territories as producers of grain is indicated by an appeal made to the territorial government in 1899 to provide for the collection of crop statistics. Step by step under the pressure of events the structure of the industry was being built up.

In presenting the thirteenth annual report of the exchange for the year 1900, the retiring president, Wm. Martin, spoke retrospectively of the early days when the exchange offices were in the city hall basement. "Members who have joined us since we have settled down in our present comfortable building can hardly realize the condition of the trade when we had our offices all over town and had to wend our way to the old basement office there to manufacture gossip while we waited for the hourly market quotations upon which we depended to tell us how the outside world was going. We did not even dream in those days of private wires and continuous market quotations". . . . "From the conditions as they are now it seems a far cry to the time when the Ontario miller was supreme as the price maker for our wheat, and yet it is only a few years since we looked to Toronto as the great market for our crop." . . . "We look now in vain for the old wooden schooner that used to carry from Fort William what we called a cargo. Twenty thousand bushels formed quite a good sized vessel load not so many years

ago, but its memory even now is forgotten when steamers that carry a quarter of a million bushels can be loaded at our lake port."

The growth of the exchange, however, had not been viewed altogether with confidence by the grain growers of the west. The centralization of trading and the development of uniform practices created a feeling on the part of the farmer that he was being exploited. One source of grievance was a regulation of the Canadian Pacific Railway that prohibited farmers from loading direct on to cars at elevator points. In October, 1897, the council of the exchange passed a resolution in which they urged the railway to abrogate forthwith this rule. This action was taken by the exchange, it was stated, to meet complaints that "an elevator monopoly and grain combine existed in north-western Canada." "Our organization as a body," the council declared, "is opposed to monopoly and combines in any form." Nevertheless, distrust of the Grain Exchange and its interrelated activities was to have a profound influence upon the organization of the Canadian grain trade in the years to come.

By 1900 the western grain trade had established itself in the world's markets and had built up a solid reputation for the excellence of western wheat. A volume of considerable bulk, though small when judged by later standards, had become available for export. Western grain and grain traders had secured recognition in the operation of the regulative structure, continually being improved, which determined grades, standards, inspection and weights. Preponderating influence in this direction had passed from Toronto to Winnipeg. Mechanical facilities for bulk handling had been developed along the most approved lines and operative efficiency kept pace with new methods. The trade

itself had become organized into a cohesive group bound together by common and interrelated interests through the organization of the Winnipeg Grain and Provision Exchange. The foundations were fairly laid for a potentially great future development. But at the same time the grain growers of the west were dissatisfied with conditions, and becoming convinced that their interests were being sacrificed to that of the carriers, handlers and traders who seemed to be prospering unduly at their expense. Thus while the stage was set for growth and development, there were also clear indications of storms upon the horizon.

CHAPTER III

THE GROWING WEST

THE period between 1900 and the beginning of the Great War was notable for the enormous expansion which took place in the Canadian North West and the confident optimism that this expansion engendered. Population was flowing in from Europe and from the United States. Each year more acres were brought under the plough. The annals of trade from time to time announced that new records had been created by the size of the harvest, or the amount of wheat exported to foreign markets. Public men and leaders of the grain trade announced with justifiable pride that "the total yield of grain was the greatest the west had ever produced." New lines of railway were constructed. New villages and towns appeared on the map. Men no longer doubted the future of the west but were characteristically given to over-estimating the rate of future development. This rapid progress was a cause of further and, in some instances, feverish expansion based upon the expectations created thereby.

In 1900 the total production of wheat in the territories amounted to 5,103,930 bushels. In 1905 the wheat harvest garnered in this area totalled 34,835,041 bushels compared with 32,754,616 bushels produced in Manitoba. In 1905 the new provinces of Alberta and Saskatchewan were carved out of the North West Territories. These provinces at once instituted vigorous policies designed to increase still further agricultural production. In 1912 the boundaries of the province of Manitoba were extended to Hudson Bay.

I. INCREASE OF FACILITIES.

The growth of the west was powerfully stimulated by the construction of additional lines of railway. Railways had three functions in the economy of the period. They gave transportation facilities to the pioneers who had already pushed into the country. They opened up new blocks of fertile land for exploitation, and, of great importance, their construction provided summer employment for new settlers with little capital until they could become established. In addition to these services they were ardent immigration agents, and did much to increase the flow of immigrants into the west.

In 1900 the total railway mileage in Manitoba amounted to 1,815 miles, and in the territories, to 1,901 miles. This represented the main line of the Canadian Pacific westward, several short railways in Manitoba and scarcely anything in the new provinces except lines from Regina to Prince Albert, and from Moose Jaw to the American boundary in the province of Saskatchewan, and rail connections in Alberta with the main line of the Canadian Pacific Railway from Lethbridge, Macleod and Edmonton. Fourteen years later, railway mileage for Manitoba was 4,076 miles, for Saskatchewan, 5,089 miles and for Alberta 2,545 miles, or a total for the three provinces of 11,710 miles. All the main arteries had been constructed or were in process of completion; there remained only to fill in here and there gaps in the railway net. In addition to the construction actually accomplished within the western provinces, there was the construction in 1901 of a second rail outlet to the head of the lakes by the Canadian Northern Railway. This outlet was further added to by the double tracking of the Canadian Pacific Railway from Winnipeg to Fort William in 1909. Edmonton had been connected with Prince Rupert on the

Pacific; projected, but not completed, was the line from Edmonton to Vancouver.

Settlers came into the west partly from the older provinces, but largely from abroad. The basic attraction was free or cheap land that was demonstrating its excellence in a series of large harvests. To this was added, as already noted, the opportunity, while the land was being brought under cultivation, to secure outside summer employment. Between 1900 and 1914 there was a total immigration into Canada of 2,906,022. Of this number 1,225,478 persons sought the prairie provinces. The actual increase in population is shown by the census of the three provinces taken in 1916. That of Manitoba had increased from 255,211 in 1901 to 553,860 in 1916; of Saskatchewan from 91,279 to 647,835 and of Alberta from 73,022 to 496,525. In 1901 the area of the three provinces contained 419,512 people, in 1916 the total was 1,698,220.

The most rapid increase occurred in Saskatchewan, which now surpassed Manitoba. It is interesting, too, to note that Saskatchewan had the largest number of settlers. In Saskatchewan in 1916, out of every 1000 of population, rural parts claimed 728 persons, as against urban, 272. In Alberta the ratio was 620 rural to 380 urban, and in Manitoba 565 rural to 435 urban. We have already shown how the main volume of grain production moved from Quebec to Ontario and from Ontario to Manitoba. By 1914 the centre of gravity had come to rest in the province of Saskatchewan. The continual increase in production between 1900 and 1914 was only partly due, however, to the inflow of settlers. There was also the development of Marquis wheat. This variety increased the yield per acre and, because it ripened about a week earlier, widened the area available for wheat culture.

The largest crop harvested within the period occurred in 1913, when there was a harvest of 209,262,000 bushels of wheat, 242,413,000 bushels of oats and 31,060,000 bushels of barley. The area laid down to crop in that year was 16,853,000 acres and the value of field crops for the west was placed at \$240,645,000. In 1914 there was a slight reduction in the acreage sown, and a great reduction in yield, due to drought which extended over an area estimated at 1,662,100 acres. Nevertheless, a rise in price that occurred with the opening of the war led to the field crops of the west in 1914 attaining to a value placed at \$278,059,500.

The creation in this way of a large volume of purchasing power in the prairie provinces came to have an important bearing upon the prosperity of eastern Canada. Large crops and good prices for grain in western Canada were reflected in increased absorptive power for goods manufactured in Ontario and Quebec. By 1914 the financial and industrial interests of eastern Canada followed with sharp interest the conditions of growth in the west, the statistics of yield, and the changing levels of prices. Moving the western grain crop annually had become the largest task that the railways had to face; financing the flow of grain laid such demands upon the banks that special concessions in the Bank Act were made.

The growth in exports increased with the increase in production. For the fiscal year ending March 31, 1914, Canada exported 120,426,579 bushels of wheat, 34,996,664 bushels of oats and 13,032,369 bushels of barley. The value of these exports was placed at \$137,612,623. Great Britain's share of this trade alone was reported to be \$117,855,198.¹ Flour exports for the same year totalled 4,832,183 barrels valued at \$20,581,079. Great Britain's importations of

¹See Chap. XVII, section 8 re accuracy of official export statistics.

Canadian flour accounted for \$11,584,483 of this amount. The total exports of flour meal and malt were valued at \$21,096,097.

While the increase of railway facilities was one of the indispensable factors to the development of this commerce, equally indispensable was the creation of the specialized facilities required to handle grain in large volume by bulk methods. The movement assumed great magnitude so quickly that it soon became a race with time to provide adequate terminal facilities and country elevators to handle the crop. Shortage in either respect, by slowing up the movement or causing a blockade, meant that grain had to remain west of the lakes when winter set in and had to be carried over for spring delivery. Many of the grievances of the grain growers in this period were connected with a shortage in grain handling facilities. By 1914 terminal capacity at the head of lake navigation had reached 41,455,000 bushels, and during the later fall season the terminal houses were feverishly worked to maximum performance. The grain fleet had grown; also, transfer houses had been built at important harbours on Georgian Bay, on the lower lakes and at Port Colborne, as well as at Montreal. More direct routes shortened the eastern rail routes to the seaboard. The city of Buffalo built up an immense business based on the transfer of grain from lake vessels to the rail carriers.

At country points, following the railway and the incoming settlers, local elevators were built. In 1901 there were 333 country elevators and 76 warehouses supplying facilities at 167 stations in Manitoba. In the territories the number of elevators was 88, and of warehouses 21, and these facilities were available at only fifty points. In 1914 Manitoba had 689 country elevators and six warehouses at 346 stations. Saskatchewan had 1,465 elevators and five warehouses serv-

ing 647 points. Alberta had 397 elevators and 11 warehouses at 195 stations. The total capacity of these country houses had grown from 13,000,000 bushels in 1900 to approximately 80,000,000 bushels capacity in 1914. In addition, in 1914 the federal government had begun the policy of building interior storage elevators, and houses of this nature had been erected at Saskatoon and Moose Jaw in Saskatchewan, with a total capacity of 7,000,000 bushels.

In Winnipeg the Grain Exchange had reached a membership of over three hundred, and memberships had risen to a value of \$5,000 apiece. Within the membership were elevator managers, millers and maltsters, cash grain commission merchants, cash grain brokers, future brokers, shippers and exporters, vessel and insurance agents and bankers. In short, there were representatives of all the varied interests that appear with specialization in a large industry. The volume of futures trading had increased to immense figures and in the field of cash grain the exchange was becoming rapidly the largest cash wheat market in the world. It had housed itself in an immense office building of which the exchange itself only used a small part. The rest was rented to the interests involved in handling grain. Thus the exchange building contained not only the organized grain exchange and other organizations, such as the Northwest Grain Dealers' Association, but it was also the actual centre of most of the companies operating in the grain trade. One result of this intimate contact was an increase in the technical efficiency of marketing grain, and another was almost complete like-mindedness among grain operators in what might be called the grain trade point of view. Probably no more compact body of traders could be found in any trading centre of similar magnitude.

II. GRIEVANCES AND REMEDIAL LEGISLATION.

Although there was great progress between 1900 and 1914, the period was marked by the stormy clash of divergent interests. The basic factor was the discontent of the farmers, who alleged that they were being mercilessly exploited. More precisely they maintained that when they sold their grain they were subjected to excessive dockage; that the weights used by the elevator owners were often unfair, and that the owners of the elevators enjoyed a monopoly due to the refusal of the railways to permit the erection of flat warehouses where standard elevators were already located. The farmers were also dissatisfied with the car supply furnished by the railways. These grievances ultimately led to a farmers' movement in western Canada which brought a new element into the grain trade.

The parties to the issue were the farmers, the grain trading interests and elevator owners, the railways and the federal and provincial governments. Out of the struggle developed government control of the grain handling, control of the railways and the establishment of farmer-owned elevator companies. Incidentally, after an attack in the courts, which failed, the government of Manitoba entered the lists against the Winnipeg Grain and Produce Exchange. The latter met the threat to its independence by reorganization.

In two sessions of the federal parliament prior to 1900 a western member had introduced a private bill to control the warehousing, shipping and transportation of western grain. This bill did not pass the house, but it stirred up such a discussion that in 1899, with a view to getting at the truth of the farmers' complaints, the government appointed a Royal Commission to investigate them, the first of many

investigations to which the grain trade has been subject. As a result of the recommendations made by this body the Manitoba Grain Act was passed in 1900. This statute introduced a large measure of government control, by the appointment of a Warehouse Commissioner, who was given under the act wide powers of supervision and investigation in the western grain area. Minor grievances were removed by requiring the railways to furnish locations for flat warehouses when demanded, and to provide standard loading platforms for direct shipment where a group of responsible farmers applied for them. In 1904, the administration of the Manitoba Grain Act and the act covering the inspection of grain, were placed under the jurisdiction of the Department of Trade and Commerce. The federal government had been forced to realize that its responsibility went beyond an insistence upon just weights and grades, and that it involved regulating the development of an important branch of commerce. In 1906 a second federal commission conducted an investigation to meet persistent complaints. Its labours were followed by more legislation extending the range of control.

In 1912 there was a comprehensive revision of the statute, which now became the Canada Grain Act. The outstanding feature of this revision, apart from the consolidation of five statutes into one, was the creation, with larger powers, of a Board of Grain Commissioners to replace the Warehouse Commissioner provided for in 1900. The act also authorized the government to construct or acquire terminal elevators at the head of the lakes, and charged the board with the duties of operation and management. In 1913 the government built a terminal at Port Arthur with a capacity of 3,250,000 bushels, in order to meet the strong demand of the farmers for government-owned terminals. This enabled the com-

missioners by the actual experience of operating such a plant to determine whether the tariff of tolls was excessive, and, by providing additional facilities at the neck of the bottle, assisted in the more rapid movement of grain to the seaboard.

Grievances against the railways united the shippers of the west generally, but the farmers were especially active, and pressed their demands for lower rates and better service. The grain growers had benefited by reduced rates as the result of two legislative bargains. The first was entered into between the Canadian Pacific Railway and the federal government in 1897 in connection with the construction of the Crow's Nest Railway. The railway obtained concessions, and in return, granted a reduction in rates. Rate reductions were also obtained from the Canadian Northern Railway by the government of Manitoba in 1901. The federal government conducted an independent investigation into the railway problem between 1899 and 1902, and this was followed by the creation of the Board of Railway Commissioners with control over rates, tariffs and services in 1905. This board was granted the power, among other provisions, of ordering cars into a congested area in the west to remove grain to the terminals if it appeared likely that the grain would deteriorate through delay in shipment.

By 1914 the Canadian grain trade had ceased definitely to be regarded as purely private business. Successive government investigations and ensuing statutes had placed it under comprehensive regulation. In a general way public policy had put the handling of grain into the same class of controlled enterprise as chartered banking or rail transportation. In one respect there was complete freedom. There was no attempt to interfere with the prices at which grain could be bought or sold. Prices were determined on the open market of the grain exchange by the free play of bids and offers.

Hence, the typical grain trader in Canada, both elevator owner and grain merchant, though rigidly controlled in the former capacity, was free to pursue his own devices with regard to purchases and sales.

III. ORGANIZATION OF THE GRAIN GROWERS.

Any lengthy struggle to achieve an end involves some measure of organization, and this step was taken by the farmers of the North West Territories in 1901 when they formed the Territorial Grain Growers' Association. In 1906, when Saskatchewan had become a province, the association changed its name to the Saskatchewan Grain Growers' Association. Meanwhile, in 1903 the farmers of Manitoba formed their own organization. In Alberta there were at first two bodies: the Society of Equity organized just before the creation of the province in 1905, and the Alberta Farmers' Association, composed chiefly of former members of the Territorial association. In 1909 these two groups united to form the United Farmers of Alberta. The influence of the farmer organizations was exerted along two lines. On the one hand, there had been a group in the old territorial association who believed that the farmers should organize a co-operative organization of their own. This group felt that as long as the farmers did not sell their own grain, regulation of the trade, however, beneficial, still left them without the substance at which they grasped. Out of the activities of this group developed the Grain Growers' Grain Company, which was organized in 1906 on co-operative lines.

On the other hand, the farmers' organizations generally brought pressure to bear upon the provincial governments to embark upon the policy of government ownership with

respect to the grain trade. Since the majority of the electorate in western Canada were engaged in grain growing, the political importance of the organized grain growers was great enough to ensure serious consideration of their representations by the parties in power. In 1908 there was a conference between the three provincial premiers at Regina to consider a demand of this nature. Nothing came of it. The premiers took the view that government ownership would involve the creation of a government monopoly at immense cost and would raise constitutional difficulties. In 1909, however, the government of Manitoba launched out by itself upon a scheme of government ownership of country elevators. It appointed a commission of administration and during 1910, 163 country elevators were acquired and ten were built. The total cost exceeded somewhat one million dollars. The project failed badly. There were heavy deficits on operation and upkeep without providing for fixed charges. After two years of operation the system was leased to the Grain Growers' Grain Company.

The government of Saskatchewan acted more cautiously, and appointed a commission to survey the problem in that province. This commission recommended the organization of a system of co-operatively owned and managed elevators under the full control of the farmers, assisted in finance by a provincial loan. The government promptly gave effect to this recommendation by suitable legislation, and in 1911 the Saskatchewan Co-operative Elevator Company was organized. The initial capitalization was \$405,050. with forty-six local units. The farmers and government of Alberta followed the lead given by Saskatchewan, and in 1913 the Alberta Farmers' Co-operative Elevator Company was organized with a subscribed capital of \$360,000. Vigorous

organization work gave it at the outset forty-six local associations, a number equal to that with which the Saskatchewan grain growers had begun.

These three farmer companies grew rapidly. By 1913 the Grain Growers' Grain Company handled grain to the value of more than \$60,000,000 and claimed to be the largest grain company doing business in Canada. The provincially formed companies were pushing out rapidly and building new elevators. Attempts were made to unite the three companies into one. Saskatchewan preferred to remain independent, but in 1915 an agreement between the Grain Growers' Company and the Alberta company led to fusion in 1916. The new company was named the United Grain Growers, Limited, and had a subscribed capital of \$2,782,121 and assets of \$6,180,526. So rapidly had the Saskatchewan Co-operative grown since its organization, that it had reached practically the same size as the company that now represented the combined strength of the organized farmers of the other two provinces.

Neither of these companies confined its activities merely to the operation of country elevators. In 1911 the Grain Growers' organized a subsidiary export company. In 1912 the parent company, having secured federal incorporation, leased the Canadian Pacific Railway Terminal B. at Fort William and purchased a hospital elevator at that port in 1913. The Saskatchewan Co-operative was slower in entering other fields, but in 1915 was laying plans for the erection of a terminal plant with an initial capacity of 2,500,000 bushels. Later it established an export subsidiary.

Thus by 1915 important groups of western grain growers had built up impressive organizations for handling and selling their product. Farmer companies were equipped to handle grain not only at country points but also at the

terminals. They held memberships on the Winnipeg Grain Exchange and at other grain trading points. By reason of the volume of grain they controlled, they were able to offer effective competition to the independent operators. They represented a producer interest on the exchange, which, by entering directly into the price-making field, endeavoured to enhance the returns to the farmer.

In all these developments the exchange itself played a strenuous part. It took an active part in shaping the legislative changes that accompanied the growth of the grain trade, and the flexibility of the Canada Grain Act owed much to the experience it placed at the disposal of the minister and committee in charge of the bill. However, since the exchange represented the strictly commercial handling and trading interests, and was alert to further the interests of its members, it naturally drew upon itself the hostility of the farmers. In its turn it viewed with ill-concealed dislike the advent of farmer-owned companies. In September, 1906, the Grain Growers' Grain Company obtained a membership in the exchange and began selling grain on commission. Six weeks later the exchange suspended the company, chiefly on the ground that by promising a patronage dividend it had violated the commission rule of the exchange, which set an invariable rate of one cent per bushel on all grain sold on the exchange. The object of the rule was stated to be the prevention of cut-throat competition by the splitting of commissions. The charge of one cent was generally conceded to be a fair one for the service rendered. Subsequently, the Grain Growers' Grain Company discovered that under the statute governing its activities the proposed distribution of patronage dividends could not legally take place. It thereupon made application for re-instatement to the exchange, but was refused. The

provincial government was drawn into the controversy and made the action of the exchange an issue of the provincial election of 1907. Finally, after the Grain Growers' Grain Company had formally withdrawn the proposal to pay a patronage dividend it was re-instated.

IV. ATTACKS UPON THE EXCHANGE.

Meanwhile, through the initiative of the Manitoba Grain Growers' Association, members of the grain exchange and of the Northwest Grain Dealers' Association were indicted under the criminal code of forming a combine in restraint of trade. A lengthy trial followed, but the charge was not sustained before the court. It was at this time that the federal government had appointed a commission which among other inquiries subjected the exchange to examination. This commission reported that the prices made on the exchange were made in open competition, but that the system of the Northwest Grain Dealers' Association in buying track grain in the country only upon the closing prices of the exchange was a trade restriction. Whether the restriction amounted to conspiracy was left to the court to decide and, as we have seen, the charge was dismissed.

Up to this point the exchange had succeeded in meeting all attacks, but in 1908 the legislature of Manitoba passed a bill amending the charter of the exchange to allow judicial appeal from its decisions and to prohibit restrictions upon prices and commissions. When this bombshell was thrown into its midst, the Winnipeg Grain and Produce Exchange threw up its hands and ceased to function. Its members for a time became curb traders, but in September, 1908, a new body called the Winnipeg Grain Exchange, organized as a voluntary unincorporated association, came into existence and replaced it. This is the present exchange, an autonomous body exempt from government control.

Although the commission rule had stood the acid test of the courts and of the investigating Royal Commission, the exchange voluntarily abolished it in 1909, but after a short experience without it the rule was re-established. It was claimed that its abolition really cloaked an abortive attempt to undercut the farmer companies and thus put them out of business. At any rate the generally unsatisfactory condition created by the absence of the commission rule was sufficient to account for its revival.

The upshot of the whole incident was that the Exchange, while successful in maintaining its independence, finally admitted the farmer companies to its membership, but prevented them from incorporating in their policy the principle of the patronage dividend. It is doubtful whether the trade gained in the long run by this action. Other exchanges have interpreted the commission rule to permit patronage dividends. With a more far-sighted policy the patronage dividend might have been allowed in this instance. By its attitude the exchange very greatly increased the hostility of the grain growers to its operations; stimulated the growth of the Grain Growers' Grain Company, and strengthened the farmers' elevator movement generally. Moreover, the absence of patronage dividends weakened the bond of interest between the management and the rank and file of the farmer companies. At a later date the absence of a patronage dividend in these companies helped forward the pool movement.

The growth of grain production in Western Canada between 1900 and 1914 did not occur in response to a high net return to the producer. It was a result of pioneer settlement. At the beginning of the period there was a price advance, but this was followed by a recession. In 1894 the average price of No. 1 Northern for the year at Winnipeg was 61.25 cents per bushel. By 1900 it had risen to 74.56

cents per bushel, and by 1909 the high mark of \$1.0856 was reached. But this was followed by a recession and the price gradually dropped to 88.1 cents per bushel in 1913. In order not to over-estimate the significance of these figures, we must remember that only a part of each crop grades as high as No. 1 Northern, and that Winnipeg prices involve a deduction to the farmer, for carriage and handling from the original point of shipment to the head of the lakes. The Cost of Living Investigation conducted by a Board of Inquiry for the federal government in 1914-15 reported that the average price per bushel for wheat received by the farmers of Canada in 1911 was 64 cents, in 1912, 62 cents, and in 1913, 67 cents. The Board concluded that it was doubtful whether during these years the wheat growers of the west were making much more than good wages.

The expansion of grain production between 1900 and 1915 was really a necessary consequence of the opening up of new territory especially adapted to grain growing. As we have already observed, a factor in the situation was the railway construction of the period, and redundant population in Europe sought in western Canada a new outlet. Settlers entered the country full of hope, but many found that the hardships of pioneer life were greater than they had expected. While they were able to maintain themselves, they found the rewards were not large. Under these circumstances the prosperity of the elevator operators and grain traders, whose profits depended essentially upon the volume handled and did not necessarily suffer by a low general price level for grain, was bound to evoke discontent among the settlers. Hence we have the paradox that this period of enormous expansion was marked by bitter struggles between the grain producers and the trade.

CHAPTER IV

THE LARGEST EXPORTER OF WHEAT

BEFORE the Great War Canada ranked third in the world's wheat export trade. At the close of the struggle she was second only to the United States. In 1923 Canada moved up into first place. Statistics for the export trade show that, between August 1922 and July 1929, she was far in advance of her greatest competitors. During these years world exports averaged annually in round numbers 798,500,000 bushels of wheat. Canada's yearly contribution to this amount of exports averaged 310,300,000 bushels, compared with an average yearly export by the Argentine of 153,400,000 and by the United States of 174,300,000 bushels. It will be noted that Canada's share in the world's wheat trade during this period approximated two-fifths of the whole, and almost equalled the total average amount annually exported by the Argentine and the United States combined.

I. EFFECT OF THE WAR UPON WHEAT PRODUCTION IN CANADA.

Various circumstances united to put Canada into first place. The closing of the Dardanelles in 1914 eliminated Russia as a source of supply for her allies. Then the Bolshevik revolution caused such unsettlement in that country that immense areas went out of cultivation and Russia ceased to be an effective factor in the international grain trade until the year of 1930. In the United States the pros-

perity of the manufacturing and mining industries, compared with the returns from agriculture, drew people from the land. Moreover, a rapid annual increase in population increased her home market. By these conditions prior to the war the exportable surplus from the United States was being reduced. In the Argentine there was considerable increase in grain production but the total amount available for export, as the figures show, fell far short of the amount available for export from Canada. Canada, the United States and the Argentine, however, pushed forward and made good the reduction in exports from the United States and from Russia.

When war was declared the allies naturally turned to the American continent as the nearest and most convenient source of supplies. In Canada, apart from the inducement of a good market, they were able to appeal to a companion in arms. The crop of 1914, of course, was not capable of being increased, but throughout the autumn of that year Canadian public opinion vigorously and unanimously urged upon the grain growers of the west the necessity of expanding production to meet war demands. With the price of grain on the up-grade this was a counsel of good business as well as of patriotism. Everything seemed to conspire to promote production. Weather conditions permitted the cultivation of a large acreage. This was followed by a favourable growing and harvesting season. So that the wheat area of 1915 represented an acreage of over 3,000,000 in excess of 1914. There was yield of 26 bushels to the acre, or five more bushels than the previous record of 21 bushels per acre in 1913. The wheat crop of 1915 amounted to 393,542,600 bushels compared with 161,280,000 in 1914. The comparative increase in the yield of coarse grains was almost equally great.

This was by far the largest crop harvested during the

war years. Despite the fact that the acreage under cultivation was maintained and, indeed, in 1918 by strenuous effort was increased by approximately 2,000,000 acres, unfavourable climatic conditions, extending over a considerable area, kept down the yield. In 1918 the total wheat yield amounted to 189,075,350 bushels only, or less than one-half of the crop harvested in 1915. The 1915 crop was not exceeded in fact until 1922, when the total yield was just under 400,000,000 bushels. Both in 1927 and in 1928 there were large crops. In 1928 the largest wheat crop ever produced in Canada occurred when an acreage of 24,119,140 acres returned a yield of 566,726,000 bushels. The average yield of that year was 23.5 bushels to the acre or five bushels above the average for the five-year period of 1924-1928.

II. GOVERNMENT CONTROL OF MARKETING.

The early years of the war were marked by transportation difficulties and by problems arising out of the abnormal situation in international exchange. Otherwise the Canadian export trade continued to be carried on substantially as in the past. Buyers representing the allied governments bought supplies through the traders on the exchange. But the extension of government control in these countries soon brought such an important food commodity as wheat within its scope. A Commission on Wheat Supplies was set up in London, England. The British government then created the Wheat Export Company, a grain purchasing agency under the control of this Commission. The Canadian government came into contact with these bodies while acting as intermediary for the Canadian farmers. The proposal was made that the crop of 1917 should be sold *en bloc* to the Allies. The price of \$1.30 per bushel mentioned by the Commission was rejected as insufficient by the Canadian Council of

Agriculture to whom the proposal was submitted for an opinion, and there ensued a delay in negotiations.

The farmers began to exhibit discontent with the situation. This was partially relieved by the Dominion Government taking advantage of a standing offer contained in the United States tariff for reciprocal free trade in wheat and wheat products. An order in council, which accepted this offer, was passed by the Government in April of 1917. Shortly after this there occurred a burst of speculative activity in the Winnipeg Grain Exchange which reached a term and the market was believed to be over-sold. There was great tension with great fluctuations in price. A dangerous situation was developing and a way out had to be found. The members of the exchange agreed that at least 90 per cent of the wheat purchased or contracted for by them would be sold to the allied governments or Canadian mills. At the same time the exchange discontinued trading in futures. Through these events it became evident that the situation was ripe for comprehensive government control. On June 11, 1917, this step was taken by the Dominion Government, which appointed a Board of Grain Supervisors upon which appeared representatives of the various grain interests, with wide powers of control over the disposition of grain.

The functions of the Board, broadly speaking, were to regulate the price of Canadian grain and to exercise certain control over the grain trade, with the purpose in view of preventing "to the utmost extent any undue inflation or depreciation of values by speculation." The Board was given power from time to time to fix the price at which grain stored in any elevator might be purchased, and the conditions as to price, destination or otherwise under which

grain might be removed from any such elevator. The Board could also prescribe what grain could be sold to millers or milling firms in Canada or elsewhere, and what grain should be sent to the United Kingdom and the allied powers. As far as possible, and having regard to position and the cost of transportation, the intention was to give the Board power to fix a uniform price throughout Canada for grain of the same kind, quality and grade. By these powers a thorough-going system of government marketing of wheat was made possible.

Upon completing its formal organization the Board took up the problem of fixing a price for the 1917 crop, and tentatively arrived at the basis of \$2.25 per bushel for No. 1 Northern wheat in store at lake terminals. The Board, however, deeming it desirable to co-operate with the United States government, which was preparing to assume control of wheat, stopped short of actually fixing the price and waited for American arrangements to be completed. In the interim trading became active and was driving the price of wheat up to new levels. With a view to checking this development the Canadian Board fixed a maximum price of \$2.40 per bushel which would apply to the balance of the 1916 crop. Meanwhile, in the United States the price had risen to over \$3.00 per bushel. As the time approached when the United States organization would be able to act, the price in the United States markets declined towards \$2.00 per bushel in expectation of the price being fixed at that figure. The Canadian Board felt that since it had put a maximum price upon Canadian wheat and thus held it down while wheat had gone to higher levels in the United States, it was right that Canadian wheat should be held at the maximum of \$2.40 until the United States board took final

action in setting the price. Consequently, it set the maximum of \$2.40 as the minimum also. This price remained in effect until the end of August, 1917.

When the organization in the United States was prepared to act, the two authorities set the price for wheat at the same level for similar grades in the United States and in Canada. The price finally agreed upon was on the basis of \$2.21 per bushel for No. 1 Northern at Fort William. For No. 2 the price was \$2.18 and for No. 3 Northern \$2.15. The price thus ultimately fixed for the 1917 crop was slightly below the figure of \$2.25 per bushel originally discussed by the Canadian Board. There is evidence that the American administration would have preferred to have set the price at not higher than \$2.00, but it was brought to agree to the higher level through the efforts of the Canadian Board of Grain Supervisors and by the desirability of keeping prices on an approximately equal basis in the two countries. In 1918 the crop was handled on a basis of \$2.24 per bushel for No. 1 Northern at Fort William.

The assumption of control over wheat supplies and the establishment of prices in Canada was conceived as a measure neither to keep prices down to a relatively low level nor to encourage increased production, but was aimed primarily at curbing the abuses of speculation. The intention was to set a price that would ensure a reasonable return to the grower. At the same time it was intended that the exportable surplus after it had passed out of the hands of the farmer, should not become "the plaything of the speculator." If the price established was a substantial one we must remember that the general price level under inflation was rising rapidly, and that from time immemorial war has caused high prices for food stuffs. While some farmers undoubtedly would have been able in an uncontrolled market

to have disposed of their wheat at higher prices than those actually settled upon by the Board, it is doubtful whether the total western crop under conditions of free trading would have brought a much greater return to the rank and file of the actual producers.

In the United States at the outset of price-fixing there appears to have been some idea of using the power vested in the food administration to keep the prices of wheat down. From this folly the American authorities were saved by the action taken by the Canadian Board. Subsequently, in the United States the idea of fixing prices at a level high enough to evoke a given volume of supply became effective. Despite disappointing yields, which meant an increased cost per bushel, the farmers of western Canada were rapidly converted to the necessity of government control. The increased acreage of 1918 represented a strenuous effort on their part to respond to the pressing demands for foodstuffs which came from the allied nations in arms.

III. THE CANADIAN WHEAT BOARD OF 1919.

When hostilities ceased there was a relaxation of government control over the purchase and distribution of food supplies. A few months after the armistice the arrangements which had existed among the allies and certain neutral nations for the purpose of buying wheat and other supplies, automatically disappeared. In Canada the Federal Government was obviously reluctant to continue the Board of Grain Supervisors. The difficulties of reconstruction in Europe, however, led to changes there, and grain markets abroad again came under government control. In the United States government action for the wheat crop of 1919 assumed the form of a fixed and guaranteed price of \$2.26 per bushel. A corporation was set up and authorized to

pay this price if the grain trade of the United States refused to take it at equal or higher prices. Under the circumstances it became necessary for Canada to consider what was the best method to employ for disposing of the 1919 wheat crop.

In western Canada there was a strong current of public opinion in favour of the continuance of government control. Before the farmer was the spectacle of the United States providing for a guaranteed minimum price. The Dominion government called conferences in June and towards the end of July. As a result it decided to create the Canadian Wheat Board to handle the wheat crop of 1919 and such other wheat of previous crops as remained undelivered on August 15, 1919, for after that date the Board of Grain Supervisors would cease to accept grain.

The instructions to the Canadian Wheat Board were in effect to sell the Canadian wheat crop of 1919 at a price which would bring the greatest possible benefit to the Dominion as a whole. The board was granted ample powers to carry out its task. It was authorized to control the sale of wheat in the home market as well as for export and, in addition, it controlled the export trade in flour. For the first six months of the crop season of 1919, the Board also controlled the price at which millers could sell flour in Canada. Action was taken at once by it to forbid trading in wheat futures on the grain exchanges.

Although it had wide powers, the Canadian Wheat Board did not give a guarantee to the grower of a minimum price for his product. The object of establishing the Board was, by controlling and centralizing sales, to protect Canada's position in the export market. The creation of the Board was rendered necessary by the return to controlled and centralized buying on the part of the chief countries of import. The chief features of the plan of control adopted

by the Board were an initial advance payment to the producer of wheat at the time of delivery, and the issuance of negotiable participation certificates which entitled the holder to a pro rata share, based upon the amount of bushels of wheat delivered, in the cash balance remaining in the hands of the Board. These participation certificates enabled the farmer to share in the final distribution of the pooled receipts of the whole crop.

The initial advance to the grower set by the Board for No. 1 Northern wheat in store at a public terminal elevator at Fort William or Port Arthur was \$2.15 a bushel; for No. 2 Northern, \$2.12; and for No. 3 Northern \$2.08 a bushel. At the outset of its career the Board was subjected to considerable criticism based on distrust of the plan, or disappointment that the Federal Government had not set a guaranteed minimum price. It had also to contend with numerous conflicting interests and with the adjustment of vexatious details. The Board, however, proceeded with its programme and when it made an interim payment of 30 cents per bushel in July, 1920, the results of its efforts was hailed with satisfaction by the grain growers, and there developed a lively agitation for the continuance of the Board.

The Canadian Wheat Board ceased to accept wheat on August 15, 1920, but by an act of parliament had been given a lease of power for 18 months, dating from November 10, 1919, in order properly to wind up its business. A final payment of the 1919 crop of 18 cents per bushel was made in November, 1920. This brought the total price received by the farmers for No. 1 Northern wheat at Fort William up to \$2.63. The total cost of administering the Board was less than one-half cent per bushel upon the volume handled. After all claims had been paid, due to unaccounted participation certificates, there was still left a balance in the hands

of the Board of approximately \$400,000 which was turned over on the basis of volume delivered to the provincial governments of the west.

IV. DECLINE IN WHEAT PRICES.

When free trading re-opened on the Winnipeg Grain Exchange in the middle of August, 1920, the range in prices for the first week for No. 1 Northern wheat was between \$2.69½ and \$2.74 per bushel. Prices continued to advance until the second week in September, when the high level of \$2.85 5/8 per bushel was recorded. Thereafter a decline set in, at first slowly, but gathering force in October until by the end of the year the average price had fallen to below \$2.00 per bushel. The downward trend continued. The crop of 1922, having regard to the general level of prices, was marketed at quite unprofitable values. In December of 1923 the price of No. 1 Northern wheat had been carried to the low average of 93¼ cents per bushel. This was the bottom of the market. A slow recovery began and by October of 1924 the average price of No. 1 was \$1.59½ per bushel.

The fall in grain prices meant heavy losses to the western grain growers. It was true that there was a general decline in prices of all kinds, but no commodities fell in price with greater rapidity or were carried further down than grain. While wheat prices between October of 1920 and December of 1923 suffered a reduction of approximately 67 per cent., the general price level of wholesale commodities during the same period showed a decline of 37½ per cent. The practical effect of this discrepancy in the magnitude of the decline between classes of goods was to leave the farmer with high general costs of maintenance and of production, in the presence of the sharp reduction he was forced to accept in

the price of his product. In addition to losses incurred in this manner the average yield per acre in 1921 was relatively low. Some parts suffered more severely than others. In 1921 Manitoba had a light crop; in 1923 she endured the ravages of rust. In 1921 and 1922 drought played havoc with yields in southern Alberta.

The years of 1921, 1922 and 1923 in the Canadian west were years of considerable discouragement and hardship not only for the tiller of the soil, upon whom the burden fell directly, but also for the western people generally, since they are largely dependent for good times upon agricultural prosperity. A single illustration will indicate how severely the farmers were struck by the decline in prices. In 1916 the carryover of farmers' loans with the chartered banks, amounted in Alberta to approximately \$17,000,000. In 1922 it had increased to over \$52,500,000. Out of this period of distress came charges against the methods of the organized grain trade, a strong demand for the revival of the Canadian Wheat Board, and ultimately the organization by the farmers themselves of the western wheat pools.

V. REVISIONS OF THE CANADA GRAIN ACT, IN 1925.

Low prices in western Canada have always produced hostility against the organized grain trade. The elevator owners and the grain traders, since they rely upon handling a large volume of grain at a small return per bushel for profits, may remain fairly prosperous even though the price at which grain is being sold does not yield a profitable return to the grower. Primarily they are interested in volume rather than in price. This is the chief complaint that the farmer makes against the grain trade, but in periods of real distress he will also complain of unfair practices and of unscrupulous methods of conducting business. Charges of

this nature began to circulate against the trade during the period of depression, and became widespread as conditions did not improve.

In 1921 the Federal Government appointed a Royal Commission to investigate the marketing of grain. This commission had not gone very far in its investigation before it came into conflict with the elevator companies in connection with a demand for the production of documents. An application for an injunction against it was successful in the courts of Manitoba on the ground that it was exceeding its authority and was dealing with matters within the jurisdiction of the provinces. The Manitoba Court of Appeal later in the year dissolved the injunction. Leave to appeal this decision was also granted. Meantime the federal election intervened and a new government came into power in Canada. When parliament met in 1923 a special parliamentary committee made an elaborate investigation of agricultural conditions and recommended that a full and searching inquiry should be made into all aspects of the grain trade of Canada.

The Federal Government responded by the appointment of a Royal Grain Inquiry Commission. The provinces of Ontario, Manitoba, Saskatchewan and Alberta passed orders in council under the various Public Inquiries Acts of these provinces, conferring upon the commissioners powers similar to those conferred upon them by the Federal Government. In this way any possibility of the work of the commission being impeded by questions of the jurisdiction of the federal and provincial authorities was removed. The commission took evidence throughout the west and at the main ports of export, and reported to the government at the beginning of 1925.

Considering the magnitude of the interests involved, the

commissioners found no grave irregularities, but made numerous suggestions covering various aspects of the trade. The report became the basis of the revision of the Canada Grain Act which was passed by the federal parliament in 1925. Probably the most important change in the organization of the trade growing out of this revision was the full recognition given to the operation of private terminals or mixing houses. In addition to the recognition by statute of this practice, changes made by the revised act represented a more careful adjustment of the law to protect the grain grower and to serve the interests of the trade. Provisions were incorporated in the act to provide for the operations of the wheat pools and in connection with the opening of the western route for export.

VI. ORGANIZATION OF THE WHEAT POOLS.

When the collapse occurred in grain prices agitation began to develop for the re-establishment of a government wheat board. This led to prolonged controversy. On the one hand this course was strongly urged upon the federal government by the farmers' organizations. On the other hand it was as strongly opposed by the trade. In the course of the discussion the constitutional aspects of the establishment in times of peace of a federal board for the compulsory marketing of wheat was raised. The law officers of the crown on the request of the government gave a considered opinion, based on post-war decisions of the Privy Council, that the creation of such a body was beyond the powers of the Federal Government. They held that except under war conditions it would be an interference with property and civil rights which lie within the jurisdiction of the provinces. Following this opinion the Federal Parliament passed an act providing for a national wheat marketing agency, which

was to come into effect after two or more of the provinces enacted legislation to endow the board with certain powers necessary to make its operation effective. The governments of Alberta and of Saskatchewan responded by calling special sessions of the house, which passed in each instance the appropriate legislation.

However, when the Federal Government asked the governments of these two provinces to name men suitable for appointment as chairman and vice-chairman of the Board, the local administrations, after offering the positions to several well-known leaders in the grain trade, were forced to report in August of 1922 that they were unable to secure an acceptance from men of the necessary experience and ability. This made the operation of the Board for these two provinces an impossibility for the crop of 1922. In April of 1923 the project was laid before the legislature of Manitoba. The government of Manitoba, following the precedents set by the Governments of Saskatchewan and Alberta, announced that it would treat the bill as a non-party measure. It was rejected by a vote of 24 to 21. Three members of the cabinet voted against it. The idea had been commonly held that Manitoba would unite with Alberta and Saskatchewan to make possible the formation of the Board. With Manitoba out of the scheme, the premiers of Alberta and Saskatchewan made a final effort to secure a Board with the necessary elements of experience, ability and public confidence, but in June of 1923 reported lack of success. With this failure, the farmers definitely recognized that they must relinquish the idea of a compulsory wheat board under government auspices.

During the protracted discussion the suggestion had been made from time to time that the farmers themselves should form a voluntary wheat pool. This alternative now com-

mended itself to farm leaders. At a meeting held in Winnipeg, a few hours after the collapse of the effort to form a compulsory wheat board, representatives of the government of Alberta and of the United Farmers of Alberta announced that Alberta would in all likelihood proceed at once to organize a provincial voluntary pool. In Alberta measures were being taken looking to this end, when a conference of farm leaders from the three provinces was called at Regina in July. As the outcome, all three provinces decided to establish voluntary contract pools organized on a provincial basis, with one central selling agency.

Shortly afterwards Aaron Sapiro, a legal expert of co-operative marketing in the United States, was invited to visit western Canada to address meetings. Mr. Sapiro, an orator of no mean ability, found at this time in western Canada a stage set for his liking. The farmers were deeply discouraged by the low range of prices which showed little signs of improvement. They were puzzled and disappointed by the failure of the federal and provincial government leaders to establish a compulsory board. In short, they were in a mood to try any scheme that promised to increase prices and lift them out of the rut of depression. The constructive portion of Mr. Sapiro's message was the formation of a voluntary pool based on a rigid five years' contract. His tour was a succession of triumphs. At one point after another he swept large gatherings of farmers off their feet in a whirlwind of enthusiasm. The movement was definitely launched.

Wheat pools were incorporated in Alberta and Saskatchewan and strenuous campaigns were carried on to secure the signing of contracts. In Alberta the objective of fifty per cent of the wheat acreage equalling 2,882,979 acres was found to lack achievement by 280,000 acres. But under a discretionary clause in the contract the directors

proceeded to organize a pool to handle the 1923 crop. On October 29th, the Alberta pool formally began operations. In Saskatchewan the contracts signed did not cover the required minimum of acreage, and the directors decided to continue to drive for contracts, but in view of the lateness of the season, not to begin operations with the 1923 crop. In 1924 both Saskatchewan and Manitoba organized provincial pools. With the election of permanent boards for the pools of these provinces, steps were then taken to carry out the original design of an interprovincial selling agency. This agency was incorporated under federal charter in September of 1924, with offices at Winnipeg and seats on the Winnipeg Grain Exchange.

When the pools began operations, they functioned chiefly to bring the farmers' wheat under the control of a centralized selling agency. Apart from two small terminal elevators leased at the head of the lakes they lacked elevator facilities. For this reason they were forced to make arrangements with the existing elevator companies to handle pool grain. A contract between the Alberta pool and the elevator companies after much negotiation was agreed to in 1923, and this contract later became the model for similar agreements between the Saskatchewan and the Manitoba pools and the elevator companies operating in those provinces. This arrangement was later limited to shipping points where the pools did not have their own elevators, but in 1930 the agreement was re-signed to apply to all elevator companies.

In 1925 the pools entered upon the policy of building up their own systems of country elevators and of securing their own terminal houses. In 1926 the Saskatchewan pool acquired the Saskatchewan Co-operative Elevator Company at an arbitrated price of \$11,059,310 which gave it also extensive terminal facilities. The other provincial pools,

partly by lease and partly through construction, also acquired terminal elevators at Vancouver and at the head of the lakes. Between the date of their organization and the summer of 1929, the pools pursued an exceptionally vigorous and militant policy. The number of country elevators under their control increased rapidly and terminal facilities were acquired to keep pace with this expansion. The experiment attracted great attention not only in Canada but all over the world. The growth of this institution was easily the outstanding event in the history of the Canadian grain trade between 1923 and 1929.

VII. THE OPENING OF THE PACIFIC ROUTE.

Another event of great importance, though much less spectacular, was the development of grain shipments through the port of Vancouver. Although the Panama Canal was opened to traffic in 1914, the war delayed its use as a route for grain. In 1917, however, an experimental shipment of 100,000 bushels was made from Vancouver under the supervision of officials of the Federal Government. This wheat reached its destination at London in excellent condition, and it was thus proved that western wheat could be shipped safely via the Panama Canal. But it took some time to divert a part of the flow of grain from its accustomed trade channels via the Great Lakes and the Atlantic seaboard to the new route. The short crops in Alberta of 1921 and 1922 actually reduced exports from that province. Terminal facilities at Vancouver were not adapted to a large movement. Railway rates to the coast were relatively high. Finally, the great elevator companies had their own terminal elevators at Fort William or Port Arthur and were interested in feeding them with supplies of grain, to the detriment of a western movement. These obstacles one by one have

been removed or at least conditions have been greatly ameliorated. A large volume of grain now seeks Vancouver for export either to Europe or to the far east. For the crop year 1925-26 the total movement of grain out of Vancouver amounted to approximately 52,838,246 bushels. For the crop year 1927-8, partly on account of the delayed threshing season in Alberta, shipments via that port exceeded 79,000,000, an amount of Canadian grain in excess of that shipped from any other Canadian port. The Alberta Wheat Pool, lacking heavy investments at Port Arthur or Fort William, has undoubtedly been very influential in promoting the movement of grain westward. It has also made some shipments from the port of Prince Rupert in the North Pacific.

The rise in wheat prices which began in 1924 brought first recovery, and then a measure of prosperity, to the grain grower of the Canadian west. Optimism began to return. Nevertheless, the area devoted to the cultivation of the four principal field crops, namely, wheat, oats, barley and rye, exhibited no expansion between 1923 and 1927. A decrease of approximately 275,000 acres in a total estimated area under cultivation to these crops in 1927 of 33,121,000 acres is recorded. This fact runs counter to current opinion, and for that reason some explanation seems necessary. The explanation appears to be that there had been an extension of mixed farming and dairying, especially in Manitoba, and this led to the withdrawal of a certain acreage from grain production. Then in southern Alberta, and to a lesser degree in southern Saskatchewan, drought led to the abandonment of a certain area. This must be set over against new land brought under cultivation. On balance there was a decrease in the acreage devoted to grain growing in Manitoba and an increase in Alberta. However, an

important aspect of the situation was that the acreage devoted to wheat increased by approximately 3 per cent at the expense of a reduction in the acreage devoted to oats and rye.

The facilities to handle grain, however, continued to show increase. This increase appears to have been due, partly to the opening up of new territory by lines of railways, and partly to the competitive situation created by the determination of the wheat pools to rely upon their own elevators where they believed there was sufficient wheat pledged to the pool to give economical operation. In 1923 in the three western provinces, 1,552 country stations were served by 3,936 elevators with a total capacity of 131,366,420 bushels. In 1927, 1,820 country stations had 4,683 elevators with a capacity of 155,036,200 bushels—an increase in four years of 268 points served and of 657 elevators. Apart from country elevators there was during the same period a large increase in other classes of elevators, with the exception of public terminal elevators at the head of the great lakes. A number of these terminal elevators changed their status after the Canada Grain Act in 1925 gave full legal recognition to terminal elevators mixing grain. The loss in public terminal capacity was, therefore, balanced by an increase in private elevators. The net increase in capacity of all elevators, country elevators excluded, amounted to approximately 49,000,000 bushels. This large increase in elevator capacity suggests that during this period elevator construction was being overdone.

VIII. THE DISASTROUS YEARS OF 1929 AND 1930.

Between 1924 and 1929 the grain growers of the Canadian west basked in the sunshine of the great post-war boom. Prices for grain were good and a cycle of generous yields

led up to the bumper crop of 1928. During the crop year of 1928-29 which ended with July 31 of 1929 there was exported from Canada 354,424,699 bushels of wheat. In addition wheat in the form of flour to the amount of approximately 53,139,487 bushels found foreign markets. The importance to the trade of Canada of these exports, as well as of coarse grains and other grain products, appears in the returns compiled by the Customs. For the fiscal year ending March 31 of 1929, the value of wheat exports from Canada is calculated to have been \$428,524,326 and the total value of exports of grain and farinaceous products was placed at \$553,587,951, or approximately 40 per cent of the total value of Canadian exports.

The large crop of 1927 had left a carryover in Canada estimated at 78,000,000 bushels. Hence, although there had been exported during the crop year of 1928-29 over 65,000,000 bushels more wheat than in the preceding year, yet on July 31 of 1929 about 104,000,000 bushels of wheat remained unsold. To these quantities must be added Canadian wheat stored in the United States, estimated at approximately 13,000,000 bushels on July 31 of 1928, and 23,000,000 bushels on July 31 of 1929. The total carryover, large as it appears, if considered purely with respect to the situation in western Canada, was not of sufficient magnitude to create great alarm, because unfavourable weather conditions had greatly reduced the yield of the crop of 1929. The final estimate for the wheat crop of 1929 placed it at 304,520,000 bushels or 262,000,000 bushels less than the crop of 1928. It appeared that if Canada were able to sell as much wheat as she had during the preceding year, after providing for home consumption and seed purposes, the carryover would practically disappear.

But since Canada is pre-eminently a wheat exporting country, her ability to sell abroad is affected by the world

THE LARGEST EXPORTER OF WHEAT 75

production of wheat, and especially by the situation not only in those countries to which she principally sells wheat but also by the amount of wheat produced by her principal competitors in the export market. The world situation may be very briefly summarized. The average acreage sown to wheat by the principal countries of the world for the five crop years from 1924-25 to 1928-29 has been estimated at 172,000,000 acres. The acreage for the crop year of 1928-29 was placed at 181,000,000 acres and for 1930-31 at 178,000,000 acres. From these figures it is apparent that the amount of land in the world devoted to the production of wheat has been showing a gradual increase. The results of such an increase may not at once appear, since low yield per acre for any particular year may counteract the effect of increased acreage. But in 1927, and in 1928 especially, the world crop of wheat was very large. The average yield per year for the five year period was estimated to be 4,276,500,000 bushels, but the yield for 1927 was placed at 4,320,899,751, and for 1928 at 4,655,531,958 bushels.

Naturally, with world yields of these magnitudes, Canada was not the only country to find itself faced with a large surplus. The estimated carryover on July 31 of 1930 of the principal exporting countries between 1927 and 1930 is shown in the following table:

Country	Millions of Bushels			
	1927	1928	1929	1930
Canada	51	378	104	112
U.S.A.	123	128	247	275
Argentina	69	90	135	70
Australia	23	29	26	35
Total	266	325	512	492

¹*Survey of the Wheat Situation*, December 1930 to March 1931, Stanford University, Vol. 7, No. 6, p. 345.

It is obvious that since 1928 the wheat trade not only of Canada but of all exporting countries has had to deal with abnormal stocks. At the end of the crop year of 1929-30 the carryover accumulated by the four leading export countries amounted roughly to two-thirds of the total amount of wheat entering into international trade. Of this carryover more than one-half was found within the United States.

Trade estimates in September of 1930 placed the requirements for importing countries for the crop year 1930-31 at approximately 736,000,000 bushels, while the surplus available for export was placed at 1,176,000,000 bushels. It was recognized that the latter figure might be somewhat reduced or increased by crop conditions in Argentina and in Australia. Current estimates (July 1931) place the surplus at 1,916,000,000 bushels. If these estimates are in the main correct it is clear that until there is a marked cutting down in the production of wheat the world's grain trade will have to continue to contend with abnormal supplies and with low prices.

The price reaction to increased supplies in the international market became significant during the crop year of 1928-29. The average cash price per bushel at Winnipeg, basis in store Fort William for No. 1 Northern wheat for the crop year ended July 31 of 1929, was \$1.24, or over 20 cents per bushel below the average price for the preceding two crop years. But even with this decline the price of Canadian wheat gradually got out of line with world values. Futures prices on the Winnipeg Grain Exchange reflected the popular opinion, influenced by the short Canadian crop of 1929, that the high quality of this crop would give it a market. World prices, however, continued to decline, with the result that the export of Canadian wheat and flour fell off sharply. The actual exports of Canadian wheat for the

crop year of 1929-30 amounted to 155,766,106 bushels, or nearly 200,000,000 bushels less than in 1928. The discrepancy was even greater when exports of wheat in the form of flour are included. Flour exports for 1929 amounted to 6,778,023 barrels compared with 11,808,775 barrels in 1928. In terms of wheat, the total exports of wheat and flour in 1929-30 amounted to 186,267,210 bushels, or exports of over 222,000,000 bushels of wheat less than in 1928-29. Incidentally, the short crop of 1929 had created distress in certain areas of the grain growing districts of Western Canada, had entailed heavy losses through lack of volume upon the country elevator companies, and was also reflected in decreased railway earnings.

The year of 1930 was one of unrelieved gloom. The Canadian carryover at the opening of the crop year exceeded that of the previous one, and, as the figures above show, there was very little reduction in the surplus stocks of the world. The western wheat crop of 1930 was of the highest quality, and was estimated to amount to 374,500,000 bushels. Nevertheless, in view of the world situation, high, quality and a moderate yield have proved to be factors of little weight. At the opening of the calendar year of 1930 the cash price of No. 1 Northern wheat basis in store Fort William was \$1.39 $\frac{7}{8}$ per bushel. At the close of the year the price had fallen to the unprecedented low level of 51 $\frac{1}{4}$ cents per bushel. Other cereals, as representative quotations show, also suffered calamitous reductions in price. No. 2 C.W. oats which had had an average price of 58.8 cents per bushel for the crop year ended July of 1929 were quoted in January of 1931 at 25 cents per bushel. For the same dates No. 3 C.W. barley had fallen from an average price of 71.4 cents to 28 $\frac{3}{8}$; flax No. 1 N.W.C. from \$2.02 to 93 $\frac{1}{4}$ cents, and rye No. 2 C.W. from \$1.00 $\frac{3}{4}$ to 28 $\frac{1}{8}$ cents per bushel. At

these prices, with freight and elevator charges to be considered, stocks of coarse grains in western Canada were practically unsaleable.

The Wheat Pool, which had begun marketing the crop of 1929 on the basis of an initial payment for No. 1 Northern wheat of \$1.00 per bushel, as prices fell found itself in grave difficulties, and was forced to appeal in February of 1930 to the provincial governments of the three prairie provinces for guarantees to protect its credits with the chartered banks. When this step was taken it was claimed that by pledging its elevator property to the banks as further security, the Pool could have secured sufficient credit to carry it through the year. It was stated that the real reason it sought government aid was the fear that if it relied upon the banks alone, and the condition failed to improve, it might find itself in a position where it would have to surrender its elevators. If it lost control of its elevators it apprehended that they might be taken over by its competitors in the trade. If this happened it would cut the ground from under the co-operative movement in western Canada for many years to come. To avoid such a contingency the Pool management turned to the provincial governments. The guarantees asked for were given, and in this way the provinces incurred a claim upon the assets of the Pool.

The extent of the losses of the Pool in the crop of 1929 were not accurately determined until the autumn of 1931, but they were conceded to be enormous and likely to prove a heavy burden upon the three provincial governments. On March 20, 1931, Premier Brownlee in a statement to the Alberta Legislature said that on March 6 there were still unsold 14,000,000 bushels of the 1929 crop. In November 1931 final details in connection with the settlement of the guarantees to the banks were completed. The total sum

THE LARGEST EXPORTER OF WHEAT 79

amounted to approximately \$22,000,000, which represented the over-payments by the banks to the Pool, which the three governments had guaranteed. This sum was divided among the three provinces as follows: Alberta, 5,536,000; Saskatchewan, \$13,300,000; Manitoba, \$3,374,000. The banks accepted 20-year bonds on a basis of approximately 4.6 per cent. in payment for their advances.

When the Pool made arrangements to handle the crop of 1930, No. 1 Northern wheat basis in store Fort William was selling between 90 cents and \$1.00 per bushel. The result of its negotiations with the chartered banks and of the survey it made of its own position, was that the Pool fixed its initial payment for this grade at what was considered then to be the low price of 60 cents per bushel. But the continued downward sag of prices presently placed the Pool in difficulties with respect to the 1930 crop. The initial payment was reduced to 55 and then to 50 cents per bushel for No. 1 Northern, and the Pool had to seek assistance in connection with this crop—this time from the Federal Government. The amount of the liability incurred will not be definitely known until the crop of 1930 has been sold. The Federal Government took steps to protect the chartered banks in their advances to the Pool. At the same time a manager satisfactory to the Pool, the Banks and the Federal Government in the person of Mr. J. I. McFarland was selected to market Pool grain. With the opening of the season of 1931-2 the central selling agency ceased to function. Each provincial pool developed its own marketing operation, operating through the Winnipeg Grain Exchange and hedging its country purchases. Pool members were offered the alternative of pooling their grain and accepting an initial payment, but the majority have reverted to the methods of sale employed before the Pool was organized.

Grain prices have been at wholly unprofitable levels for production. There is much distress in certain districts among the farming population of the three prairie provinces. The only ameliorating factor in the situation is that a large flow of exports is being maintained and that this promises to reduce the accumulated carryover of previous years. After a cycle of prosperity and expansion, western grain growers, by the sharp turn of circumstances, are being forced to consider the future basis of agriculture in western Canada.

IX. CANADIAN PRODUCTION AND EXPORTS OF WHEAT, 1868-1929.

In this brief sketch of the development of the Canadian grain trade an attempt has been made to trace only the main lines of development. The following table prepared by the Dominion Bureau of Statistics² exhibits year by year since 1868 the ups and downs in production and marketing. Especially it does reveal the marvellous expansion in grain growing in western Canada that has been witnessed during the last 25 years, in spite of setbacks.

² *Monthly Bulletin of Agricultural Statistics*, Sept. 1930, p. 310.

THE LARGEST EXPORTER OF WHEAT 81

Year ¹	Production 000 bush.	Exports of		
		Wheat bush.	Wheat Flour bbl.	Wheat & Flour ² bush.
1868	³ 21,252	2,809,208	375,219	4,497,694
1869	³ 21,705	3,557,101	382,177	5,276,898
⁴ 1870	16,724	1,748,977	306,339	3,127,503
1871	³ 22,132	2,993,129	453,144	5,032,277
1872	³ 22,909	4,379,741	474,190	6,513,596
1873	³ 23,153	6,581,217	540,317	9,012,644
1874	³ 23,398	4,383,022	302,783	5,745,546
1875	³ 25,458	6,070,393	415,504	7,940,161
1876	³ 22,211	2,393,155	268,605	3,601,878
1877	³ 25,572	4,393,535	476,431	6,537,475
1878	³ 30,093	6,610,724	574,974	9,198,107
1879	³ 34,022	5,090,505	544,591	7,541,165
⁴ 1880	32,350	2,523,673	439,728	4,502,449
1881	38,000	3,845,035	469,739	5,958,861
1882	47,832	5,867,458	489,046	8,068,165
1883	30,921	745,526	197,389	1,633,777
1884	45,443	2,340,956	123,777	2,897,953
1885	42,816	3,419,168	386,099	5,156,614
1886	38,305	5,631,726	520,213	7,972,685
1887	39,034	2,163,754	350,115	3,739,272
1888	33,045	490,905	131,181	1,081,220
1889	30,872	422,274	115,099	940,220
⁴ 1890	42,223	2,108,216	296,784	3,443,744
1891	42,145	8,714,154	380,996	10,428,636
1892	48,182	9,271,885	410,185	11,117,718
1893	41,347	9,272,208	428,610	11,200,953
1894	42,550	8,825,689	222,975	9,829,077
1895	41,066	9,919,542	186,716	10,759,764
1896	32,970	7,855,274	421,758	9,753,185

¹The exports relate to the years ended June 30, 1869-1905 and the years ended July 31, 1906-30.

²For the above table, wheat flour has been converted into bushels of wheat at the uniform average rate of 4 $\frac{1}{4}$ bushels to the barrel of 196 lbs. of flour.

³Estimated.

⁴Census years; production figures are from the reports of the decennial census.

Year ¹	Production 000 bush.	Exports of		
		Wheat bush.	Wheat Flour bbl.	Wheat & Flour ² bush.
1897	47,118	18,963,107	1,249,438	24,585,578
1898	63,298	10,305,470	792,536	13,871,882
1899	56,811	16,844,650	768,162	20,301,379
* 1900	55,572	9,739,758	1,118,700	14,773,908
1901	85,305	26,117,530	1,086,648	31,007,446
1902	93,569	32,985,745	1,287,766	38,780,692
1903	78,496	16,779,028	1,587,600	23,923,228
1904	69,029	14,700,315	1,321,469	20,646,925
1905	106,097	40,399,402	1,532,014	47,293,465
1906	125,505	39,434,658	1,562,285	46,464,941
1907	93,105	40,077,950	1,667,903	47,583,514
1908	112,434	47,624,065	2,008,249	56,661,186
1909	166,744	52,623,887	3,374,268	67,808,093
* 1910	132,078	48,442,780	3,101,185	62,398,113
1911	230,924	78,786,889	4,180,892	97,600,904
1912	224,159	95,510,826	4,496,299	115,744,172
1913	231,717	114,902,121	4,596,739	135,587,447
1914	161,280	63,901,874	5,077,389	86,750,125
1915	393,543	235,738,776	7,426,437	269,157,743
1916	262,781	140,223,819	7,631,429	174,565,250
1917	233,743	118,579,601	11,257,942	169,240,340
1918	189,075	55,921,319	9,119,796	96,960,401
1919	193,260	63,450,123	6,455,429	92,499,554
* 1920	226,508	136,968,832	6,521,469	166,315,443
1921	300,858	150,935,359	7,740,961	185,769,683
1922	399,786	229,849,411	11,003,460	279,364,981
1923	474,199	292,425,153	12,051,424	346,566,561
1924	262,097	146,958,158	10,169,692	192,721,772
1925	395,475	275,557,078	10,896,654	324,592,024
1926	407,136	251,265,788	9,247,824	292,880,996
1927	479,665	288,567,390	9,865,754	332,963,283
1928	566,726	354,424,699	11,808,775	407,564,186
1929	304,520	155,766,106	6,778,023	186,267,210

¹Census years; production figures are from the reports of the decennial census.

PART II

CHAPTER V

THE COUNTRY ELEVATOR

THE Canadian method of handling grain is what has become known as the bulk-handling system. That is, the grain is never bagged but is transported in loose form from the thresher or combine to its ultimate destination. This system became possible on a wide scale with the development of the grain elevator. The grain elevator made its first appearance in Buffalo in 1841. Actually some grain had been handled in loose form before the invention of the elevator, but after 1841 the method of using elevators was employed first at terminal points such as Buffalo and Chicago. From the terminals the use of elevators gradually worked back to initial shipping points in the country. Farmers ceased to bag their grain, and carried it in open wagon boxes to the local elevator. From these it was transported in box cars to terminals. Thus when the Canadian west was opened up to agriculture, handling grain through elevators without bagging was well known in the United States. It was this system, copied from the United States, that appeared very early in the history of the grain trade in western Canada.

The great advantages of the use of elevators are cheapness and convenience. They are particularly suitable where there are large quantities of grain of the same variety and quality to be handled with expedition. This condition prevails to a large degree in the Canadian west. Without the elevator system Western Canada could not move the crop to terminals with anything like the speed with which that task

is now accomplished. Bulk handling is applied to all the grains grown in the west, though it is not very well adapted to barley intended for malting purposes. On the other hand, the additional cost of shipping barley in sacks has been computed to amount to 15 cents per sack. Flax seed also gives certain difficulties; its slippery nature makes it the bugbear of the elevator operator.

The technique of putting grain through a country elevator is simple. The farmer with his load of grain in a wagon box or truck drives up on to a dump scale. The grade is agreed upon, or a sample for grading purposes selected. The loaded vehicle is weighed and the grain is then dumped into the hopper, after which the vehicle is weighed again. The grain in the hopper is then carried by power to the top or cupola of the elevator and is there spouted to a storage or shipping bin, depending upon whether it is to be stored or shipped immediately. Rarely is it spouted directly into a freight car though this is possible.

I. THE FIRST ELEVATORS.

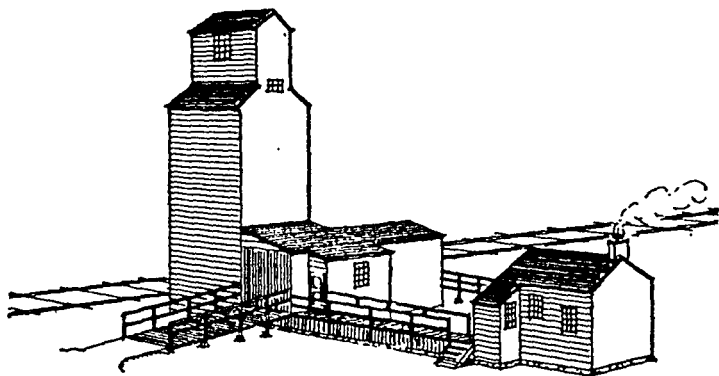
The first odd shipments from the west went out in bags, but with rail connections to Minneapolis and Duluth, followed shortly by similar facilities between Winnipeg and Fort William and Port Arthur, elevators began to appear. An intermediate stage was the use of flat warehouses and horse elevators, where horses were used to elevate the grain. The first country elevator built in western Canada of the type employed to-day was constructed at Gretna in southern Manitoba by the Ogilvie Milling Company in 1881. The first terminal elevator at the head of the lakes was constructed by the Canadian Pacific Railway at Port Arthur in 1884.

The country elevator system became firmly established

with the construction of the Canadian Pacific Railway through western Canada. That company very quickly perceived the immense advantages that a system of local elevators would possess for the rapid transportation of grain. Elevators, by eliminating delays in loading cars, would speed up deliveries, and would enable the rolling stock of the company to be utilized much more completely than if loading took place from flat warehouses or from the farmers' wagons. Although the railway provided the facilities for loading other forms of freight, it did not wish to enter upon a work of such magnitude as the construction of elevators. With a view to encouraging the development of these utilities, therefore, the Canadian Pacific Railway Company offered elevator sites on its right of way at a nominal rental to parties who would construct grain elevators. It also gave an undertaking that at points where elevators were erected the railway would discourage the loading of cars with grain through flat warehouses or direct from farmers' wagons or otherwise than through such elevators. Practically no one desiring to ship grain from elevator points could get it on to the cars except by having it handled through the elevator.

In order to obtain these concessions the elevators constructed had to have a capacity of at least 25,000 bushels, be equipped with machinery for cleaning grain and be operated by a steam or gasoline engine. Elevators that satisfied these requirements came to be known as standard elevators, since they conformed to the standards laid down by the railway company. Upon these standard elevators the Canadian Pacific Railway Company imposed the condition that the owners must furnish storage and shipping facilities to parties wishing to ship or store grain. On this basis country elevators began to be built along the right of way at suitable points. After the year 1887, in which the crop was unex-

pectedly large, the number greatly increased. When the Canadian Northern Railway, now part of the Canadian National Railways system, at a later date opened up northern Saskatchewan and Alberta, officials of the railway company took active steps to interest capital from Minneapolis in the construction of elevators along these lines.



*Courtesy of
Harper Construction Co. Ltd., Winnipeg, Man.*

TYPICAL COUNTRY ELEVATOR

II. LOADING PLATFORMS.

The inducements given to the elevator companies by the railway later became a source of keen grievance to the farmers of the west. They felt that it delivered them into the hands of what appeared to them to be a local monopoly. They protested vigorously, and as a result of their agitation the Manitoba Grain Act of 1900 required the railways to provide suitable loading platforms wherever a certain number of the farmers tributary to a given shipping point made the demand. Subsequent revisions of the Grain Act continue the obligation. Nevertheless, it must be observed that the far-sighted policy of the railways led to rapid elevator con-

struction and carried the country elevator through the pioneering stage in western Canada. The country elevator of standard type is now recognized as a necessary link in the facilities for handling western grain.

The loading platform plays a certain role in the shipping of country grain. By concerted action farmers may secure a loading platform and thus avoid using the country elevator. While this is a valuable right to the producer and was only secured after strenuous effort, in actual practice the competition offered by this means of shipment is not great. A relatively small volume of grain is loaded at local points in this way. Several circumstances militate against the use of the loading platform. A box car is difficult to load from a farmer's wagon or truck; the farmer lacks the protection of elevator weights to cover his shipments, and the car must be loaded within 24 hours during the rush season or the railway can impose a demurrage charge. Since a car will hold from 1,200 to 2,000 bushels of wheat, according to size, and the average wagon load is over 100 bushels, from ten to sixteen wagon loads are required to fill a car. Unless trucks are used for haulage, the short period allowed for loading has the effect of limiting the use of the platform to farmers adjacent to the shipping point, that is, to producers who can bring their grain to the railway siding rapidly. Farmers living at a distance can only hope to use the platform by securing assistance to have the grain hauled. Sometimes farmers organize groups to load platform cars, but they usually find it more convenient to put the grain through the elevator.

A device for transferring the grain quickly from the farmer's vehicle to the car, known as the track loader, recently has made its appearance and is used by certain farmers. The railway companies, however, will only permit this

machine to be used by the actual owner or owners. The object of this restriction is to protect the elevator. In pursuing this policy the railway companies undoubtedly are governed by long run considerations, and the danger that would be created to the rapid movement of grain if a form of competition developed that threatened to reduce markedly the number of country elevators.

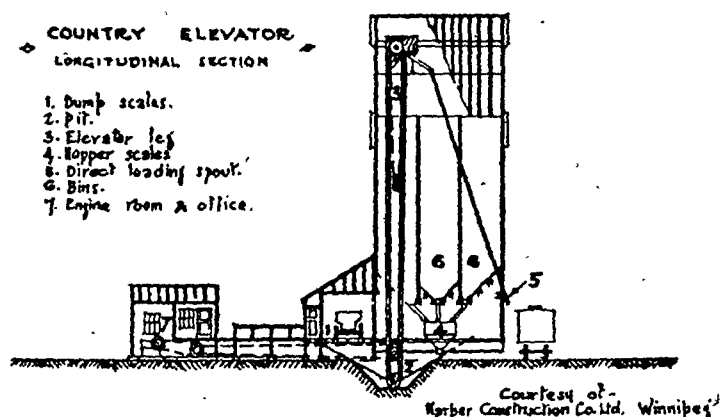
For the crop year of 1928-29 the receipts of grain at country elevators in western Canada amounted to 548,644,917 bushels. Platform loadings for the same year came to a total of 31,305,434 bushels. Thus, approximately, 94 per cent of all the grain shipped made use of the country elevator. The chief significance of the loading platform is, that by offering an alternative method of making shipments, it acts as a natural check upon attempts to increase the scale of country elevator charges. Any marked increase in elevator rates would divert more grain over the loading platform. There is some tendency also to turn to it when times are depressed, the farmer "making wages" by saving the costs of elevator handling.

III. COUNTRY ELEVATOR CONSTRUCTION.

Although at some points country elevators with a capacity as high as 75,000 bushels have been constructed, on the average they do not run as large. The typical country elevator has a capacity of 30,000 or 40,000 bushels, principally 30,000. The size is based partly upon the territory tributary to the shipping point, partly upon the degree of competition from other elevators that will have to be faced, and partly upon the economics of operation. An elevator with a capacity of over 40,000 bushels when busy will require more than one man to operate it efficiently. Unless the heavy autumn flow of grain is of sufficient duration to keep

two men employed throughout most of the season, the smaller elevator will give better returns on investment. Although a certain amount of storage is possible, the country elevator is built essentially for the purpose of receiving and despatching grain.

It scarcely needs to be pointed out that the country elevator is not designed with a view to architectural beauty, nor with any purpose other than the efficient and economical handling of grain. The cost of construction is kept as low as



COUNTRY ELEVATOR (Longitudinal)

is consistent with efficiency and service. Country elevators are built of wood, though frequently they are sheeted with tin plate. The dimensions of an elevator with a capacity of 35,000 bushels are 30 by 31 feet. The walls to the eaves are 50 feet high. The rise of the eaves accounts for another four feet of elevation and the top or cupola is 18 feet high. Allowing for the foundation the total height is approximately 74 feet.

The main foundations of the elevator are formed of two massive slabs of cement. These are 20 inches thick and are each 30 feet long and 10 feet wide. Between these two slabs down the centre there is an 11-foot interval. This space is excavated to provide for the pan which contains the lower parts of the dump scale, the foot of the elevating leg and the lower parts of the hopper scale. This pan is from six to eight feet deep and the inner sides of the cement slabs extend down to this depth to form its walls. The walls of the elevator and of the bins are built of "crib", consisting of two by four inch deals laid on the flat, one on top of the other with the ends overlapping and dovetailing together.

The receiving shed adjoins the elevator proper and contains the dump scales. Nearby, a small building houses the power plant and the office. This is usually connected with the receiving shed by a platform which covers the transmitting power shaft. The hopper scales for outward shipments or for weighing up the elevator are located in the centre of the ground or work floor of the elevator. The power is transmitted into the pan and is applied there to the elevating leg. The bin plan ordinarily provides for a row of bins rectangular in shape along each side of the elevator, which go down the whole depth of the house and rest upon the concrete foundation. These are of different dimensions. There are also several bins placed in the centre over the work floor. The bins range in capacity from 600 to 3,200 cubic feet.

Thus constructed, the elevator is equipped to receive, weigh, ship, and to a certain extent store grain in bulk. Really efficient apparatus to clean grain is not always provided. The cleaning of grain is not an obligation now imposed by the Canada Grain Act, but may be done by mutual agreement between the operator and the farmer.

When grain is received it is carried on a belt to the elevator leg. From thence it is taken to the cupola, at the top of the building. The elevating device is a rubber belt equipped with cups or buckets about 12 inches apart. From the cupola the grain is spouted downward as directed into bin or car. An elevator of 30,000 bushels capacity will contain 16 bins, a dump scale for receiving grain, a hopper scale to weigh shipments, a 15 h.p. engine for power and its complement of elevator machinery and spouts to handle the grain. A room for cleaning machinery when installed is frequently located above the dump scales. At present day prices the cost of such an elevator fully equipped is approximately \$10,000 to \$12,000, depending upon the number of bin divisions.

IV. DUAL FUNCTIONS OF THE COUNTRY ELEVATOR.

In examining the business operations of a country elevator, if confusion is to be avoided, the reader constantly must keep in mind the dual character of the enterprise. The elevator, built by private capital on a railway siding, is part of the system of transporting grain. As such it is affected with a public interest and does a public warehousing business closely regulated by the state. This regulation covers both charges and methods of service. But in addition to being a public utility the country elevator is also a buyer's plant. The country elevator company is interested in the purchase and sale of grain both as a broker and a middle man. It handles its own grain in its own plant as it pleases. It aims to act as the sales agent or broker for the farmers' grain passing through its plant in car lots on the way to the terminal. If, as is usually the case, it has terminal elevator affiliations it seeks to direct the flow of farmers' grain to its own terminals.

It is possible that a double system of grain handling

might have grown up in western Canada. On the one hand there might have been developed a system of public warehouses confined to that activity and forbidden to deal in grain, on the other hand a system of private houses which would have handled purchased grain exclusively. But actually the system is recognized to be a mixed one. Even in the province of Alberta, when the Alberta Pool operated its country elevators under private license and confined their operations to Pool grain, the Grain Act required that if a Pool elevator was the only one open at a certain shipping point it must be operated under a public license and accept farmers' grain. The country elevator companies not only handle grain as warehousemen for the farmer but they also deal in grain as merchants. Moreover, under the bulk-handling system the elevator companies are not compelled, except where they have a special bin, to keep their own grain separate from that being handled for the public. The company can legally and does in practice store both, when the grades are alike, in the same bin.

The elevator company may agree to store grain in a special bin for a farmer who wishes to preserve the identity of his shipment. The price of this service when given is also regulated, and legally may exceed that of storage in the common bins. The elevator company, however, is not compelled by law to furnish special binning facilities. As a matter of good business it does usually provide special binning, but there is no obligation upon it to do so. Special binning is a privilege, not a right. Under no circumstances are country elevators required to receive grain of any kind when there is not sufficient room to accommodate it nor to store it properly, nor when the elevator is necessarily closed. The Grain Act also specifically provides that the operator of a public country elevator is under no obligation to receive

any grain which has become out of condition, or is such that it is likely to become out of condition. But, subject to these exceptions, the operator of a public country elevator must receive all grain offered to him without discrimination and in the order in which it is offered.

V. GRADES, WEIGHTS, AND DOCKAGE.

Because of the number of disputes which have arisen between country elevator operators and farmers delivering grain, the procedure covering the reception of grain is now carefully controlled and standardized by the Canada Grain Act. When a farmer determines to put his grain through the elevator, he has first to decide whether he will have it handled on the basis of a graded storage receipt, a graded storage receipt subject to inspector's grade and dockage, or as specially binned grain. Each of these methods has its advantages. We will describe handling practices by the commonest method, that is, where graded storage receipts are employed. These are popularly known as graded storage tickets. Later we will point out where the practice varies in the event of one of the other methods being chosen.

Having decided upon the graded storage receipt the country agent of the elevator company and the farmer must agree upon the quality of the grain, and upon the amount of allowance for dockage that must be made to clean it to standard grade. With respect to determining the grade, this is a matter of judgment on the part of the agent. If he exceeds the official grades there will be a loss to the elevators, since the latter is compelled to return to the farmer the quantity and quality marked upon the receipt. Where a number of agents are in keen competition with each other for grain the agent may deliberately overgrade in order to hold the business. In other instances he may offer the

producer an alternative. He may offer to give him No. 1 Northern with a dockage allowance of three or four per cent or No. 2 Northern with a dockage of 1 per cent. If the spread in price in the market between the two grades is narrow, the second of these offers may represent slightly greater value, but as a rule the desire of farmers to be able to report a crop of No. 1 quality leads them to accept the first. In his disposal of the grain, however, the agent may himself class it as No. 2 and bin it with that grade, though, as a matter of fact, this is rarely done. Evidence before the Royal Grain Inquiry Commission in 1924 tended to show that country elevator companies incurred some loss through their country agents overgrading grain. Returns from 5,403 country elevators for the crop year 1928-29 show the following receipts and shipments of wheat by grades:

	Receipts net bus.	Shipments net bus.
1 Northern	5,339,786	2,825,563
2 Northern	34,491,746	28,472,377
3 Northern	54,947,825	50,366,588
No. 4	38,026,966	43,480,667
No. 5	31,521,631	36,976,942
Other grades	59,088,635	63,033,853
Total	223,416,589	225,155,990
Special Bin	222,368,382	221,526,824
Grand Total	445,784,971	446,682,814

It will be noted that in the three upper grades shipments are consistently below receipts, but in the lower grades the reverse holds true.

Dockage may be described as foreign matter and cracked grain that must be removed in order to bring the grain up

to standard. Dockage is usually determined by a set of sieves and a small scale. A sample of grain is sifted, and the broken grain and small seeds which pass through the sieves are weighed and expressed in terms of percentage which gives the dockage. The sieve used is constructed of 28 gauge steel wire forming a mesh with 100 openings to the square inch. The Cowan Dockage Tester is also employed, a small machine which will separate wheat, wild oats and small weed seeds. A somewhat larger machine is the Emerson Wheat Tester, popularly known as the "kicker", because in this machine the wild oats are ejected from the wheat by a series of jerks or "kicks". The "kicker" requires more power to operate it than the Cowan dockage tester which can be operated by hand. The moisture content of grain can also be determined mechanically, an important consideration in years when a substantial portion of the grain comes to the elevator tough or damp. All sieves or appliances used must have the approval of the Board of Grain Commissioners. It should be pointed out that only on occasions when there is doubt or disagreement is recourse had to formal tests. Since both the farmer and the elevator agent have experience with grain they very often quickly agree upon grade and dockage.

Many disputes between farmers and elevator companies have been centred around the weighing of grain. These have ranged all the way from complaints of the trade practice of taking the "break of the beam"¹ to the more serious charge of tampering with the scales to give false weights. The

¹ "The break of the beam' in pounds is, technically speaking, the quantity which it is necessary to place on the platform to cause the beam to rise from a central position in the trig loop to the top, or conversely, the quantity required to be removed from the platform to cause the beam to fall to the bottom." The actual complaint was that elevator operators did not allow the beam to come to rest at an exact weight, but read the scale when the beam was moving upward or downward. See *Report of the Royal Grain Inquiry Commission 1926*, p. 21.

investigation of 1923 showed that apart from rare instances of downright dishonesty, the basis of these complaints rested upon attempts of the elevator agents to "bring the house out even," that is, by weighing the farmer's load light to balance the shrinkage that occurs whenever grain is handled. In this way unauthorized deductions in the weight of farmers' loads frequently amounted to 20 or 25 pounds per load. Previous to this time an allowance for shrinkage had been authorized for specially binned grain but did not cover other methods of handling. With a view to eliminating this cause of grievance and of putting deductions upon a legal basis, the Board of Grain Commissioners established allowances for shrinkage based upon experience in handling each class of grain. For all grains a minimum deduction of 5 pounds was allowed on quantities up to and including 25 bushels. As the amount tendered by the farmer increased, proportionate deductions were authorized. For instance, for wheat, flax and rye the shrinkage allowance on quantities between 42 bushels and 58 bushels was 15 pounds; for oats 8 pounds and for barley 12 pounds. Returns from 5,436 country elevators for the crop year of 1928-29 show overages and shortages on handling as follows:

	Net weights bus.	Overage bus.	%	Shortage bus.	%
Wheat	449,169,467	1,380,602	.31	-----	---
Oats	47,553,988	617,790	1.32	-----	---
Barley	45,855,451	522,930	1.15	-----	---
Flaxseed	2,893,519	-----	-----	7,020	.24
Rye	8,415,966	28,638	.34	-----	---
Total, all grains	553,918,391	2,542,940	.46	-----	---

After the grade, weight, dockage and shrinkage allowance have been determined the graded storage receipt can be

made out. This is the farmer's claim upon the elevator company. The receipt sets out explicitly the details of the delivery—grade, weight, dockage, shrinkage allowance, and the net amount of grain calculated as cleaned to grade. It provides that a quantity of grain of the same grade, kind and quality will be delivered either at the elevator or in carload lots at a terminal elevator point, upon the return of the receipt and the payment of charges.

The authorized maximum charges for receiving, elevating, spouting, insurance against fire, storing for the first fifteen days, and putting into cars on track are three cents per bushel for flax, two cents per bushel for wheat, barley and rye, and one and three-quarters cents for oats. The act provides that a tariff lower than the maximum may be filed with the Board by any licensee, but in the case of any country elevator company this lower rate must apply at all its country elevator points. Under this provision the tariffs at present in effect are as follows: wheat, barley and rye, one and three-quarter cents per bushel; oats, one and one-quarter cents per bushel, and flax, two and one-half cents per bushel. In some instances companies that do not wish to handle flax charge the full maximum rate of three cents per bushel to discourage deliveries. The Board has the power to permit a rate lower than the tariff filed at a specified country elevator where it is satisfied that lower rates are necessary to meet special competition. This power is rarely invoked; practically speaking, the same rates are in effect throughout the whole grain growing region.

In the event of shipping or delivering any grain that has been stored in a country elevator, with respect to the amount deliverable, the net weight shown on the receipts is final unless an investigation by the Board of Grain Commissioners shows reason for the contrary. The shipper must be paid in

the event of short shipment for the full billing capacity of the car up to the amount of his tickets at the same price as the car was disposed of.

Where the farmer does not wish to sell his grain at the local point but wishes to put it in store at a terminal, the usual method of handling is on the basis of a graded storage receipt. Where however there is a disagreement between the agent and the farmer with respect to the grade and dockage of his grain, a second method is followed. A sample of the grain is drawn from each wagon load at the time of delivery. These samples are preserved and mixed, and a three pound sample sent to the nearest inspection office to be officially graded. The receipts issued to the farmer for the grain delivered bear the inscription "Subject to Inspector's Grade and Dockage." After receiving the inspector's certificate of grade the agent recalls the interim receipts, and issues fresh receipts on the basis of the determined grade.

Where grain is specially binned, the receipt issued by the elevator guarantees merely the weight. Samples of the grain are drawn from the wagon in a similar manner to that employed where the grain is being handled subject to inspector's grade and dockage. This sample is retained until the grain is shipped out and the official grade is received by the shipper. If the shipper is not satisfied with his grade the sample is then sent forward to the chief inspector, who compares it with the official sample drawn from the car upon which the grade has been set. The inspector decides whether the identity of the grain has been preserved by the elevator company, and his decision is final. By this method, the farmer who chooses to bin his grain specially, protects himself with a view to receiving the identical grain from the elevator that he delivered it to. The maximum charge for grain handled on a basis of special binning is three cents

per bushel for flax, two and one-half cents per bushel for wheat, barley, and rye, and one and three-quarters of a cent per bushel for oats. Although the authorized maximum is slightly higher for handling grain on a special bin basis, the effective rate is the same as for grain handled on a graded storage basis. The ability to offer a farmer a special bin is a form of service competition between elevator companies.

VI. STREET AND TRACK PURCHASES.

When the farmer sells his grain to the country elevator company the same methods are followed in handling, except that in this instance the agent issues a cash ticket. Two forms of cash ticket are authorized: (1) where an agreement has been reached with respect to grade and dockage; and (2) where the ticket is made subject to inspector's grade and dockage. In the latter instance final settlement is not made until the official grade placed on the sample sent forward to the inspection point has been received.

The purchase of grain at the country elevator points by the elevator company's agent is a very important part of his duties. The business is carried on under daily instructions with respect to prices, which, in the case of the line companies, are sent out in Manitoba and Saskatchewan by the authority of the Price Committee of the Northwest Grain Dealers' Association. In Alberta they are issued by the Western Grain Dealers and Millers' Association of Calgary.

In buying and selling country grain there are four main classes of grain prices. These are "spot" or cash prices for grain in storage at the terminals; "billed and inspected" where a price is made on grain which has passed the inspection point but has not reached the terminal; "track" prices obtainable for grain loaded in cars ready for shipment to the terminals; and finally "street" prices—the price at which

the country elevator buys grain delivered to it by the wagon load. Transactions at the country elevators are not limited to the last two classes, for the company is also licensed to act as commission merchant, and after the farmer's grain has left the local point of shipment the company may either purchase the grain, or, in the capacity of commission merchant, accept instructions covering its sale.

The highest price is normally that paid for "spot" grain at the terminals; the lowest for grain bought as "street" at local points of shipment. At these points the spread per bushel between "street" and "track" prices for wheat is about five or six cents. The "street" price is of great importance to the farmer. At the present time it is not definitely known how much farmers' grain is purchased at "street" prices, but in 1923 over fifty per cent of all grain handled through the country elevators was bought in quantities of less than carload lots.

The difference between "street" and "track" prices is due to a variety of circumstances. In the first place, the farmer who can ship a carload of grain is in a superior bargaining position. He has the option of sending it forward to the terminal where he can sell it as "spot" grain. In any event he will have to stand the handling charges, freight and seller's commission, before he disposes of it. But in order to secure the grain, the country elevator company must quote a price comparable to the net return which the farmer may expect if he sends it forward himself. Hedging its purchases daily in the futures market, the company bases its offer on the prices set in the futures market at Winnipeg for the date when the car may be expected to arrive at the terminals. This works out that the returns on "track" purchases to the elevator companies are virtually

limited to handling charges and the one cent per bushel that the farmer would have to pay for selling it through a broker.

Moreover, out of the "track" price quoted to him, the track seller must pay the necessary charges for handling, transporting, weighing, grading and cleaning to place his grain in store cleaned to grade at the terminal. With the "street" seller it is different. He hands over his grain and receives his price in cash, and all subsequent operations are at the expense of the buyer, in this instance the country elevator company. Hence the apparent spread between the price quoted for "street" grain and that for "track" is magnified through the practice of quoting a price for "track" grain, subject to various deductions which cannot be made in the case of grain purchased by the wagon load. As a result, the actual net advantage to the "track" seller has been estimated at around three or four cents.

It is important to note that the seller of "street" grain is not in a strong position to bargain with the country elevator agent. If he has not enough grain to fill a car, he cannot send it forward to the terminals himself. Hence, if his delivery point is provided with only one elevator he must take the price offered or return home with his grain. The only other alternative is to drive ten or fifteen miles with it to another elevator point. Occasionally where there are a number of elevators at one shipping point, there is some competition in prices between them for "street" grain, but on the whole the list prices sent out for the instructions of the agents appear to be closely adhered to by all, and competition is mostly confined to a question of grade or the amount of dockage.

The wide spreads between "track" and "street" prices that have sometimes appeared as the shipping season pro-

gressed may have been partly due to difficulties encountered by the elevator companies in securing cars for shipment. As a result of bitter complaints that the elevator companies were receiving preferential treatment in the allotment of cars by the railways, a statutory rule was passed by which cars at local points were allotted on the basis of the order in which the applications were made. Under this rule the elevator ranked with any other applicant, and might find when buying "street" grain freely that it could not move its purchases rapidly to the terminals. Grain destined for the eastern route, which does not reach the terminals before navigation ceases, must be carried in storage until spring. Hence, as the season advances and this possibility appears, the price of "street" grain falls, and the difference in price between grain which can reach the terminals before navigation closes, and grain which cannot, increases. The present rule permits country elevator companies to have two unfilled orders for cars on the car order book at one time, as against the farmer's one.

The official schedule of charges laid down for the services performed by the country elevator does not leave much of a margin for profit except where a very large volume of grain goes through the individual elevator. In the case of "track" grain the strong bargaining position occupied by the seller who can ship the grain to the terminals reduces the possibility of gain. But in the case of grain offered for sale by the wagon load, the seller, as we have seen, is in a very weak position. This lack of bargaining strength is reflected in the lowered prices at which transactions take place. The main profits of the country elevator company are derived from the purchase of "street" grain and its accumulation and sale at the terminals. In addition there are the returns which accrue to the selling department, which, acting as a commis-

sion merchant, sells grain for the farmer who has placed his grain in store at the terminals.

VII. COUNTRY ELEVATOR PROFITS.

The average annual direct cost of operating a country elevator of 30,000 bushels capacity lies between \$2,500 and \$3,250. This sum is exclusive of interest on investment, depreciation charges and a proportionate share of head office expenses. With these additions the annual cost of operation is around \$4,000. Evidence submitted to the investigating commission of 1923 by one company showed a total average annual cost of \$4,142.60 per elevator on its country line. Another company calculated an average per elevator of \$3,878.23. The items entering into this computation were as follows:

	1923
Interest on elevator investment at 7 per cent	\$ 487.45
Depreciation at 5 per cent	348.20
Agents' salaries, misc. expenses and site rents	1,493.69
Taxes	158.50
Insurance on buildings	105.19
Insurance on grain	50.35
Gasoline	148.48
Travelling superintendent's salary and expense	206.47
Telephone and telegraph	85.68
Agents' bonds	35.97
Liability insurance	22.66
Elevator repairs	123.12
Proportion of head office expense	612.47
Total	\$3,878.23

These figures lead to some interesting conclusions. At handling charges of $1\frac{3}{4}$ cents per bushel for wheat, the returns for handling 100,000 bushels would amount to \$1,750, or less than one-half of the costs of operation. If

50,000 bushels of the amount handled were specially binned at the maximum of $2\frac{1}{2}$ cents per bushel, the total return would be \$2,125. To income from handling may be added earnings from the storage of grain. The initial charge of $1\frac{3}{4}$ cents per bushel covers storage of 15 days. Charges for storage in excess of that period are at the rate of one-thirtieth of a cent per day. Earnings of \$1,000 from storage would represent, therefore, the storage of 100,000 bushels of grain for thirty days. In view of the rapidity with which grain in ordinary years is moved forward to the terminals, it is not probable that earnings from storage would exceed this sum. Assuming earnings of this amount from storage, the total income with a handling of 100,000 bushels and no special binning, would be \$2,750, or if half were specially binned at maximum rates, \$3,125. Even the larger sum, in view of expenditures and cost of maintenance, would not permit an economic return on investment. Official returns for the crop year 1928-29 with a bumper yield, show that 5,436 country elevators in the western division handled grain amounting to 553,918,391 bushels, or an average approximately of 101,800 bushels apiece. It seems a fair inference that, in an ordinary year, in so far as country elevators operate purely as warehouses, they do not earn a fair return on investment.

But we have already pointed out that the country elevator companies regard their country houses as buyers' plants. They sell grain on commission for farmers, and buy grain "track" and "street" for re-sale at the terminals, protecting themselves in these operations by hedging their purchases on the exchange. The rate of commission on sales is one cent per bushel for all grain except oats, where the rate is five-eighths of a cent per bushel. Hence if a company earning approximately \$3,500 by handling and storage of grain

could add to its income to the extent of \$1,000, either by selling grain on commission for its patrons or by purchase and re-sale, it would earn a fair profit on the enterprise. All the evidence goes to show that it is by the combination of returns from handling, storage, commissions and returns from purchase and sale that the average country elevator company earns profits.

The importance of volume of business as a factor in profitable operation must not be overlooked. With practically fixed costs of operation, if the volume of grain available in a given season is below the average, it is reflected in losses in country elevator systems. On the other hand, where a very large volume is assured, a country elevator system might yield profits without recourse to the purchase of grain. Thus the Alberta Pool Elevator system, which operates on the same basis as a private company as far as handling and service charges are concerned, distributed in the autumn of 1928 excess earnings of approximately one million dollars as the result of the operation of 160 line elevators and terminals at Vancouver and Prince Rupert. It is impossible to determine from the statement made public how much of this excess was earned by the country line, and how much is to be attributed to the terminals. It is very probable that the larger part represents earnings at the terminals. It is significant to note, however, that the average amount handled by the Pool per country elevator in that year was 166,940 bushels, or above the average handling for all country elevators operating in the western division. The largest amount handled by an individual pool elevator was at Vulcan, Alberta, where the total for the year amounted to 433,945 bushels. At Coaldale, during five days in October, 1927, a pool elevator handled 109,000 bushels, 63,441 bushels received and 45,820 bushels shipped out. Obviously in such

instances handsome profits would be realized. Apart from the direct significance of volume to a country elevator system, the close affiliation of these lines to terminal companies must be kept in mind. Country elevator lines act as feeders to terminal elevators, and failure to secure volume in the country has an ill effect upon the profitable operation of the affiliated terminal.

In January of 1924, a special investigation was made by the Royal Grain Inquiry Commission on the earnings of country elevator companies. Figures were obtained from companies which owned 75 per cent of the country elevators in the west. It was shown that for the year 1920-21, 49 elevator companies handled 223,761,155 bushels of grain. Net profits from grain of \$2,702,572 were made by 40 companies, with losses by nine companies of \$106,413, leaving net profits for the group of companies examined of \$2,596,160. This gave a net profit of 1.16 cents per bushel of grain. The figures for the year 1921-22 were for 51 companies and showed 266,874,642 bushels handled, with total profits therefrom by 41 companies of \$1,630,306, and losses by ten companies of \$290,197, leaving net earnings of \$1,340,306, approximately .502 cents per bushel. For the crop year 1922-23 the figures were based on returns from 54 companies; 318,246,622 bushels were handled with total earnings of \$3,188,683 by 50 companies, and losses by four companies of \$634,044, making net profits of \$2,556,639 or .803 cents per bushel. The data covered earnings from all grain handled by the country elevator companies, both through elevators and the commission departments, as well as commissions on grain shipped from loading platforms but sold through the selling departments of the elevator companies. For the three year period examined the average profits per bushel handled was four-fifths of a cent.

VIII. CLEANING GRAIN AT COUNTRY ELEVATORS.

The increase of weed seeds in western grain in recent years has created a demand from time to time that all country elevators be equipped with suitable machinery to clean grain. The tariff of prices covering the services performed by country elevators provides that where grain is cleaned the maximum charge shall be two cents per bushel. Standard elevators, when the country elevator system developed, had to be furnished with adequate cleaning facilities, and large numbers of country houses had cleaners installed for the purpose of cleaning grain before shipment. Many of these were later removed, or went into disuse for lack of employment. The farmers did not patronize them, and the elevator companies themselves did not use them for cleaning their purchased grain.

The advantages urged for cleaning grain at the country elevator are that (1) cleaning will raise the grade of the farmer's grain often from a rejected to a straight grade; (2) it will save the freight on dockage between the country point and the terminal which the farmer must now pay, and (3) the screenings can be used for feeding stock on the farm. Nevertheless, the experience of the Saskatchewan Co-operative Elevator Company, which in accordance with the wish of its shareholders and as a matter of policy, had installed cleaners in 367 of the 387 country elevators it was operating in 1922-23, was not favourable to the system of country elevator cleaning. During that crop year only 25 per cent of these cleaners were used, and out of a total of over 40,000,000 bushels of grain handled only 2,175,150 bushels were cleaned.

This lack of patronage seems to be due to several circumstances. While the type of cleaner that is considered

practicable for a country elevator will remove ordinary round seeds and broken wheat, it will not remove buckwheat and wild oats. Hence grain cleaned at a country elevator would still have to undergo a second cleaning at the terminals, with charges for this service to the farmer. In addition, screenings should be removed from grain at a country elevator before the receipt for the grain is made out. Cleaning grain involves time and in the rush of delivery in the autumn would be wholly impracticable on this basis. Finally, the experience of the Saskatchewan Co-operative Elevator Company was that many farmers did not take away the screenings from the elevator. They were left to accumulate, and became a nuisance and expense to the elevator as well as a menace to the farms of the district.

The reluctance of the farmers to claim their screenings is owing to the fact that the seeds of certain weeds are very injurious if fed to stock, and must be eliminated from the screenings before feeding. Moreover, it has been proved that weed seeds fed in their natural state often do not lose their germinating qualities. The danger of reseeding a farm with weed seeds by using screenings for feed purposes has been clearly recognized by the various governments which have passed Noxious Seeds Acts designed to combat the weed menace. Very few farms are properly equipped to treat screenings in such a way that the weed seeds injurious to stock will be removed, and the germinating qualities of the remainder be destroyed. The commercial product known as "re-cleaned screenings" requires a special screenings machine to separate the screenings of food value from that which is worthless.

Hence, while it is recognized that if grain were cleaned before shipment there would be in the aggregate a large saving in freight, the balance of advantage is such that ordinary

utility cleaners installed in country elevators have been utilized only to a slight extent. Many of the country elevator companies, themselves, are strongly opposed to the installation of cleaning outfits at country points on the grounds that it would delay moving the crop in the autumn, increase the cost of handling, and that the costs involved would make it unsound economically. The installation of an ordinary cleaner in a new elevator is estimated to cost \$1,500, and to remodel an old elevator and install would add to that amount another \$500. If complete cleaning equipment were provided it would cost \$2,000 more.

The average cost of cleaning the 2,175,150 bushels cleaned by the Saskatchewan Elevator Company was calculated to be two and two-thirds cents per bushel. This cost is somewhat above the maximum rate now allowed. At the terminals it is possible to handle large quantities expeditiously and to clean the grain fully. There is also a market for the recleaned screenings. Often this is not available at country points where coarse grains are abundant. However, at some country points where the weed situation has been particularly serious, country elevator companies, as an inducement to secure grain in competition against other companies, have installed cleaners. But with the exception of certain parts of Manitoba even under these conditions the cleaners are not fully utilized. At the bottom of the farmer's reluctance to take back screenings to his farm is his deep-seated dread of increasing the number of weeds he will have to combat in the future.

IX. THE COUNTRY ELEVATOR AGENT.

The actual management of a country elevator is in the hands of the company's agent. There are over 4,000 country elevator agents in western Canada. Their position is most

important since all the grain shipped, except that which goes over the loading platform, passes through the country elevator. The country elevator agent stands between the farmer and the company, and bears directly the brunt of any dissatisfaction which the farmers may have with the system of handling. He is also the representative of his company and much of its success will rest upon his tact and ability.

The duties of a country elevator agent are to receive, buy, store and ship grain; to make out the proper tickets and keep the records of the house; to furnish reports to his company, and to supply a daily statement to the railway station agent of the total quantity of grain taken into the elevator for the day and the total quantity of grain in store at the end of the day. Sometimes he is also entrusted with funds from his company for the purchase of grain, but this is rare. Usually the company arranges to have its cash tickets honoured by the bank or some other local paymaster. The agent is usually employed for nine or ten months in the year, from the opening of the grain shipping season in August until all the grain in the district is shipped out. At the end of the year, as part of the annual audit, there is a weigh-up or inventory made of any grain remaining in the elevator. Elevator agents earn from \$100 to \$150 a month according to the experience of the individual and to the importance of the elevator of which he is in charge. He must have a sound knowledge of grain, sufficient education to calculate dockage, to weigh accurately, and to make out the records, and a fair amount of managerial ability. His main problem is to keep his house always in a position to receive and handle grain of all kinds. When the rush of shipments is at its height in the fall he must not let the elevator become clogged. This involves alertness and activity in obtaining cars and shipping out grain, as well as judgment in using the bins that

are at his disposal. In southern Alberta and southwestern Saskatchewan the elevator may be called upon to handle only two or three grades of wheat, but in the northern portions of these provinces and in Manitoba eight or ten grades of wheat, two or three grades of barley, of oats and of rye and one of flax may pass through the elevator during the course of the season. The condition varies from year to year according to the prevalence or absence of frost, rust, wet weather or smut. The Grain Act gives the agent, after giving notice to the owner, the right to move grain in store forward to the terminal to keep the elevator clear. At all times he must be ready to take appropriate measures if grain in storage threatens to go out of condition.

A staff of good agents is essential to the successful operation of a line of country elevators. The usual method of recruiting agents is from young men employed as helpers to agents during the busy season when the flow of grain is heavy. After training of this kind, satisfactory applicants are then promoted to take charge of an elevator. The next advance is to the position of superintendent. Travelling superintendents move from one point to another, keeping a watchful eye over the work of the agents, smoothing out troubles, advising the inexperienced, checking up the careless and dismissing the incompetent.

The Northwest Grain Dealers' Association, composed of the country elevator companies, maintains an inspection bureau at Winnipeg. The purpose of this bureau is to keep a record of all country elevator agents for the confidential use of the members of the association. Records are kept which show the antecedents and character for honesty and ability of each man engaged as an agent. When an agent leaves the employ of a company the latter reports to the bureau the reason for the termination of the employment.

By means of this record a company having before it an application for employment can ascertain whether the applicant has been employed previously by an elevator company, and whether his antecedents and personal habits were such that it would be unwise to employ him.

Finally, all elevator companies require their agents to execute a bond. At one time some companies made use of a bond known as a "shortage" bond. By this instrument the guarantee company insured the elevator company against all losses in weights, except in certain specific cases. The agent in turn agreed to indemnify the guarantee company against any payments it might make under the bond, and to accept the mere fact of such payment having been made by the surety as conclusive evidence of his own liability to it. In the autumn of 1921, however, the Board of Grain Commissioners issued a regulation providing for the cancellation of the license of any country elevator where the agent was subject to the execution of a "shortage" bond. The action was taken in view of representations that this type of bond put an unfair responsibility upon the country agent and was susceptible of being abused.

The type of bond now used generally is known as the "one act" bond. By the terms of this bond the bonding company is liable only for losses which occur through the fraudulent or dishonest conduct of the agent. But once an elevator company has established the fact that some portion of a loss has occurred through dishonesty or fraud, the bonding company must pay the whole of the loss except such portion thereof as it may be able to show did not occur through the agent's fraud or dishonesty. The agent, in his application for his bond, agrees beforehand that he will indemnify the bonding company for any loss it may be called upon to make good under the bond, and that the payment

by the bonding company shall be conclusive evidence of his liability. This type of bond of course is not peculiar to the grain trade.

A number of penalties for breaches of the Grain Act fall directly upon the elevator agent. These penalties include both fines and imprisonment, according to the seriousness of the offence. Further, the terms under which the licenses are granted to the country elevator companies provide that where an agent has been convicted of a breach of the Act he may not again be employed without the consent of the Board of Grain Commissioners. With over 4,000 country elevator agents in western Canada, it goes without saying that from time to time some agents are found guilty of stealing grain from their company, or from farmers, or from both. One method is to create an overage by underweighing the grain received into the elevator, and then to issue fraudulent grain tickets to the extent of the overage to an accomplice who shares in the proceeds of the theft. In other instances where grain has been improperly disposed of at the expense of the company with the result that a shortage in the stores of the elevator has appeared, the guilty party has not hesitated to resort to arson to conceal the theft. By burning down the elevator before the annual weigh-up takes place, the fact of the shortage may be concealed. But on the whole, there is nothing to show that the level of honesty of the agents of country elevator companies falls below that found in other lines of business.

X. THE PROBLEM OF RAPID DELIVERY.

The use of combines in the harvest fields and of trucks to convey grain to the shipping point, is creating a new problem for the country elevator system, that is, how to provide sufficient handling facilities to move the bulk of the crop in

about three months, under conditions that will yield a profit to the system. A number of factors enter into the situation. As we have seen, the average amount handled annually per elevator is frequently under 90,000 bushels. With such a small volume of grain the country elevator as a warehousing and forwarding enterprise could not exist, if it were not aided by the fact that part of the wheat is purchased and resold at a profit. If additional elevators are built to take care of the increasingly rapid delivery of grain during the fall months, the total amount to be handled per elevator for the season seems bound to decrease. Less volume, due to a shorter season, with inappreciable reductions in operation expenses for the country elevator, does not promise adequate returns for new construction, and it is doubtful if such will take place. Failure to handle the grain as it is threshed means temporary blockades at local points and a frenzied competition for the use of such facilities as are available. Such a situation is not inviting, and an ultimate solution of the problem may be reached by having fewer but larger country elevators.

At first sight it would seem as if the difficulty might be met if a higher tariff of charges were authorized for handling grain at country points by the Board of Grain Commissioners. Higher rates would then compensate for smaller volume of handling. But it must be remembered that the loading platform offers an alternative method of shipping grain, and the elevators do not charge the maximum rates authorized. A higher tariff would probably mean that more grain would go over the loading platforms, particularly after the first rush of the season was passed. More grain moving out by the loading platforms would still further reduce the volume of elevator handlings. Apart altogether from the objection of

the farmers to paying higher rates, this method does not seem to offer a solution of the problem.

The wheat pools made an interesting experiment for the crop year of 1929. With a view to inducing farm storage the Saskatchewan Pool Elevators, Limited, paid to pool members delivering their grain to pool elevators after February first, a premium of one cent a bushel, which was increased to two cents per bushel after March first, and to three cents per bushel after April first up until the cut-off date established for the year's crop. In Alberta a premium of one cent per bushel was paid on wheat delivered after December fifteenth, and two cents per bushel after January fifteenth up to the end of the Alberta Pool's year. The result of this experiment did not lead to a continuance of the practice. The pools found that they were paying out considerable sums of money in the aggregate without appreciably slowing up the volume of deliveries during the autumn.

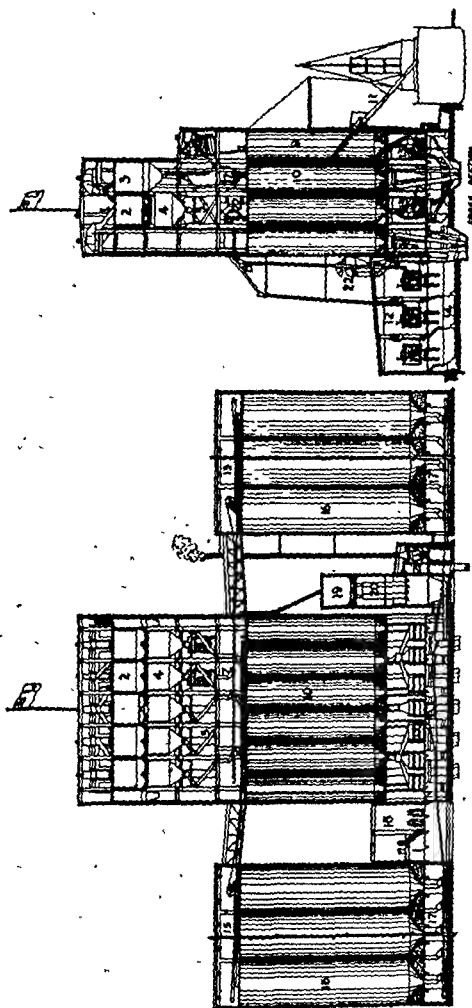
It has been argued that the use of track loaders or portable elevators would permit a more rapid rate of shipment over the loading platforms. But in the event of their general use, the burden of taking care of rapid deliveries would be merely transferred from the country elevators to the railways and to the terminals. The change in harvesting methods seems bound to lead to an increase in storage facilities at interior points in Western Canada.

CHAPTER VI

TRANSPORTATION TO THE TERMINALS

FEW people realize the stupendous task involved in moving the western grain crop from local points to the terminals. As a transportation problem it has no parallel in any part of the world. We get some hint of its relation to the ordinary traffic of the Canadian lines from the fact that around sixty per cent of the companies' equipment of cars cannot be utilized on the companies' lines except during the grain moving season. During seven or eight months of the year they have not hundreds, but thousands of cars lying around side tracks and terminals. Almost overnight there is a demand for every car they can put into the service. When the autumn flow is in progress with a large crop, more grain passes through the terminals at the city of Winnipeg than through those of Minneapolis, St. Paul, and Chicago combined.

The bumper crop of 1928 afforded the railways an opportunity of showing what they could do. Between August first of 1928 and January fourth of 1929 receipts at Fort William and Port Arthur, the head of navigation on Lake Superior, amounted to 306,545,807 bushels, at the port of Vancouver to 40,748,845 bushels and at Prince Rupert to 2,154,592 bushels, with a total movement to terminals during this period of 354,291,911 bushels. This represented a handling of 286,023 carloads of grain for the railways. Taking the period from September fifteenth to November thirtieth inclusive, which constitutes the heaviest movement east-



Courtesy C. D. Howe & Co., Port Arthur, Ont.

- 1—Discharge spouts from elevator legs
- 2—2500 bushel scale garner
- 3—2500 bushel cleaner garner
- 4—2500 bushel hopper scale
- 5—Mayo and telescopic distributing spouts
- 6—Screening separator
- 7—Loading spouts to storage bins
- 8—Car loading spouts

- 9—Shipping bin
- 10—Workhouse bin
- 11—Boat loading spout
- 12—Car unloading shed
- 13—Receiving separator
- 14—2500 bushel receiving hoppers
- 15—Storage cupola
- 16—Storage bins

- 17—Storage basement
- 18—Substation
- 19—Drier garner
- 20—Drier
- 21—Boiler house
- 22—Dust Collectors

TYPICAL TERMINAL ELEVATOR, PORT ARTHUR AND PORT WILLIAM, ONTARIO

bound from Winnipeg to the lakehead, the records of the Canadian Pacific Railway show that 111,475 east loads were moved out of Winnipeg in 77 working days, or 1,447 cars per day, being 24 eastbound trains per day with an average of 60 cars per train continuously during the whole period. During the 24 hours of September thirtieth a record was established when the Canadian Pacific moved out of Winnipeg eastbound 2,107 loads. This would mean that 35 trains with an average of 60 carloads left Winnipeg at the rate of one every 41 minutes. When we recall that the grain ports on Lake Superior are 428 miles east of Winnipeg and that Winnipeg itself is on the eastern edge of the grain belt, the magnitude of this transportation performance becomes apparent. Such an achievement involves the most careful preparation before the grain moving season actually begins, and unremitting supervision while it is in progress.

The traffic is divided between the Canadian Pacific Railway and the National Railways. Both are heavy grain carriers. For the five months ending December of 1928, 164,236 cars were handled on the Canadian Pacific Railway lines, and 120,907 cars on the National lines. There is a small movement over the Great Northern Railway to Duluth in Minnesota. In the fall of 1928 this amounted to less than 1000 cars. The methods by which the Canadian railways handle their vast grain traffic are substantially the same. The descriptive details which follow are drawn partly from the practice of one road and partly from that of the other. Slight differences in organization are ignored.

I. PREPARATIONS FOR MOVING THE CROP.

The railways begin their preparations as early as May. With the Canadian National System, as soon as seeding begins each local station agent makes a weekly report show-

ing the acreage seeded in his territory. Thereafter weekly reports indicate the progress of the growing crop, and, as it nears maturity, the probable yield in bushels. Using acreage as a basis, western transportation officials prepare a first estimate of the number of cars considered necessary to handle the crop. This estimate is submitted to the higher executives of the system, who allot a supply of cars to the western region based on the number estimated as necessary, and having regard to the total number available and the number required in other regions.

The next steps are to assemble this supply of cars, to make certain that they are in proper shape to carry grain, and to place them at suitable points in the west. During the winter months cars gravitate to the east, but as soon as an estimate of the requirements for the western region is given, the empties begin to be moved west. This movement is continued until the number of cars deemed sufficient to handle the crop is available in the west. As the crop develops the preliminary estimate of requirements may be reduced or increased to meet changed conditions.

When the movement of empties from the east is begun, instructions are issued to the principal western terminals to examine all cars and to card them as fit or unfit for grain. Those carded as fit for grain are moved to the branch lines on regular trains. This placing of the empties usually begins about the first of June and continues until the crop starts to move. The cars carded "Fit for Grain" after being distributed are not again used for any traffic. They are held for grain. The supply of cars for the usual summer traffic are selected from cars which reach stations under load. These are again reloaded so that they will pass through inspection points between May and August.

Cars carded "Unfit for Grain" are sent to the repair

shop and put into shape, so that by the beginning of the crop moving season the railways have practically all of their box cars in the western divisions fit for the carriage of grain. A final precaution is taken. After cars have stood on a country siding for two or three months, the oil and waste in the journal boxes may dry out. Stress of weather may have damaged the cars in other ways. As a final measure repair cars with carpenters and car inspectors are sent over the lines just before the grain movement begins.

Similar care is taken to provide motive power. Engines are moved from the east, and after going through the shops are distributed to the various terminal points. Equipment not likely to be required, such as work train equipment, is taken out of the terminals and stored on pit tracks or other places where it will not interfere in any way with the grain movement. With respect to no other traffic are such elaborate preparations made. When the season opens the railways will have every available box car and engine ready at strategic points in the grain growing area. Between 200 and 300 additional engines and train crews will be put into service on each system. The quickness with which the volume of grain shipments develops may be seen from the records of the movement during the month of September of 1928. Shipments from country elevator points for the week ending September 7 amounted to 1,082,422 bushels; for the second week to 5,122,954; for the third, 20,574,448, and for the last week of September grain shipped from country elevator points amounted to 28,494,789 bushels.

II. THE DISTRIBUTION OF CARS.

When deliveries are general throughout the west the distribution of cars on an even basis is a task of no small magnitude. This task must be taken in hand immediately,

as the original quota provided when the season opened melts away and new supplies are required. In the case of the Canadian Pacific Railway there is an allotment of a certain number of cars to three grand districts of its lines which correspond approximately with the territorial limits of the three prairie provinces. Each of these districts is again subdivided. The Manitoba district comprises three divisions of railway, the Saskatchewan district three divisions, and the Alberta five. Similar arrangements exist upon the Canadian National lines. As the movement develops a certain number of cars is allotted from day to day for each division. In turn these cars are supposed to be distributed where they are most needed.

The distribution of cars in the various divisions is under the jurisdiction of the chief despatcher. His work, in turn, is supervised by the superintendent. The work of the superintendent of the division is supervised by the general superintendent of the district. The work of the superintendent of the district is supervised by the officials of the western headquarters of the company. In the first instance this means the superintendent of transportation for western lines, but includes the general manager and vice-president in charge, all of whom are vitally interested in the car distribution and the smooth movement of traffic.

Reports are received at headquarters every day showing conditions at every individual station on the western lines. These reports are received at divisional headquarters, district headquarters and headquarters at Winnipeg. The reports are sent out by telegraph from each station each day. They show the amount of grain in store at each of the elevators at each individual point; the number of cars loaded the previous day; the number of empty cars available for loading on the following day; the number of cars on the car order book,

and some minor details. The reports are taken up by the car distributors at divisional headquarters, who may even secure additional information from agents as to local conditions. Distribution orders are then given for the next twenty-four hours. These are reported to district headquarters and are received at western headquarters about seven o'clock in the evening, when they are checked over by the superintendent of transportation for western lines. The general distribution of empty cars between divisions and districts is arranged on a ratio basis with respect to marketing. One district may be marketing 20 per cent of the crop, another district 50 per cent and a third district 30 per cent, and in so far as possible cars available are distributed on the same percentage.

The greatest source of supply of empties is, of course, the head of the lakes. Practically 95 per cent of the cars unloaded there are returned empty. When the empties return through Winnipeg they are forwarded west via the different routes according to the requirements of the districts and divisions. A daily record is kept of the movement to each district and division. Reports are also transmitted showing the number of cars under load at each station and the number of empties on hand. Due to weather conditions, sometimes empties are distributed to branch lines when they cannot be used immediately. If these empties are near the main line they may be back-hauled to territory where heavier marketing obtains. It is possible to tell from day to day the exact number of cars on hand for loading, the exact number loaded the previous day, the number of bushels of grain in store at the elevators, and the number of orders for cars on the car order book. In this way the movement is very closely supervised and watched. The information is

also available to the trade, and simplifies the problem of marketing.

In handling the movement the railway officials display a certain amount of pride. The aim is to excel previous performances. Thus in 1915 the Canadian Pacific Railway created a traffic record which was not beaten until 1922, which surpassed the 1915 record by about 20 per cent. This was considered by the transportation officials as the acme of perfection in handling grain and not likely to be excelled for many years. But in 1923 the 1922 record was surpassed. The 1923 record stood until the autumn of 1928, when all previous performances were beaten decisively. In certain years a bountiful harvest combines with climatic conditions favourable to rapid marketing. Rain interferes to a certain extent with transportation performance. The railways are always trying to create new records, and from early summer until the middle of winter the western transportation staffs concentrate their attention upon the problem of moving the grain crop expeditiously.

III. THE CAR ORDER BOOK.

Despite the elaborate arrangements put in force by the railways, scarcely a season occurs when a large crop is harvested but that complaints are made that the supply of cars is inadequate to the demand. What constitutes a car shortage, is a question upon which the farmers and the railways never fail to disagree. The problem is a difficult one and capable of being viewed from different standpoints. When the railway company has made certain that each district on its lines has obtained its due proportion of cars, and that there is being maintained from shipping points a flow of grain sufficiently heavy to move the crop to the terminals as

fast as it can be absorbed there, it naturally holds that there is no shortage of cars. But, when farmers are unable to obtain cars when they want them and find they must store their grain and wait for cars until possibly the lake ports are closed for the winter, they, on their part, just as naturally conclude that insufficient facilities are being provided. Under such circumstances a situation may develop that is productive of much bitterness and ill-feeling; on the one hand irritation against the railways, and on the other, very keen rivalry between shippers to obtain whatever cars are available.

When the acreage under crop in western Canada was increasing by leaps and bounds, the supply of cars became an acute problem. In the territory served by the old Canadian Northern lines all sorts of methods were resorted to by the desperate farmers to obtain cars. Attempts were made to pay trainmen to spot cars for them. In other instances, farmers drove to neighbouring points and took possession of empty cars, and either bribed or cajoled the train crews to place them at their shipping points. A suspicion that the country elevator owners were obtaining a disproportionate share of available cars added to the intense dissatisfaction that prevailed.

With a view to regularizing the distribution of cars at local points the Manitoba Grain Act of 1900 established what is known as the Car Order Book. The sections of the act dealing with car supply have been retained and expanded in subsequent revisions. In the Canada Grain Act of 1930, 16 sections are devoted to the supply of cars and the Car Order Book. Apart from the specific regulations, it is provided that the Board of Grain Commissioners shall have power in the case of a car shortage to direct the railways to make an equitable distribution of empty cars among shipping points

on any line of railway. The Board is also authorized to exercise special powers in car distribution to take care of emergency situations where an elevator may be in danger of collapse, where grain is damp and liable to become damaged, where grain is in danger of becoming heated, where grain may be insufficiently housed, etc.

In addition to these powers conferred on the Board of Grain Commissioners, the Board of Railway Commissioners may intervene if a railway company fails to provide sufficient facilities for the movement of grain from any district, and may order the railway company to carry the grain from that district to points of interchange with other lines, who must provide equipment to carry such grain forward to the terminals. The rates of carriage under these circumstances are those lawfully filed by the company in default, but they are apportioned between the companies as the Board of Railway Commissioners may direct.

In recent years there have been fewer complaints about car supply and distribution. The disappearance of the Canadian Northern Railway and the organization of the Canadian National System was followed by an increase in equipment of the lines concerned of about 15,000 cars. This helped to relieve the situation. Nevertheless, when the immense crop of 1928 was harvested under excellent weather conditions and with the assistance of tractors, combines and trucks, the problem of car supply became acute once more. There can be no doubt that both railways responded magnificently to the demands made upon them. But as in the case of the country elevators, the increased speed with which the crop is delivered to the local shipping points is creating new problems for the railways.

The law at present provides that at each station where there is a railway agent, and where grain is shipped under

such agent, an Order Book for cars shall be kept in which applicants for cars will write their order. At railway sidings where no agent is maintained the Board of Grain Commissioners have the authority to direct the railway to appoint a custodian of the Car Order Book, who will perform all the duties imposed upon the railway agent in this connection. To prevent error or any abuse of the regulations the Act provides the precise detailed form of the order and requires the signature of the station agent. The book is open to the public for examination. No applicant except a country elevator may have more than one unfilled order on the Car Order Book at one time. A country elevator may have two unfilled orders on the Car Order Book at one time. The applicant for a car must declare himself at the time of making the order to be the actual owner of a car of grain, the agent appointed in writing for an actual owner, or the operator of a country elevator.

The use of the Car Order Book is enforced by heavy penalties. The obligation of providing the book with the proper forms rests with the railway companies. Any failure to do so is punishable on summary conviction by a fine not exceeding \$500. Any person who in any application makes any untrue representation is liable on conviction to imprisonment for six months or to a fine not exceeding \$200. The Board may also order his application to be cancelled. Finally, any railway agent who fails to comply with the Act in respect to the distribution of cars is liable to a fine not exceeding \$25 for a first offence, and for any second or subsequent offence to imprisonment for not more than two months or to a fine not exceeding \$200.

Cars so ordered must be awarded to applicants in order of time of application without discrimination between country elevator, loading platform or otherwise. Each applicant,

upon being informed by the railway agent of the allotment of a car to him in good order and condition, must within three hours of notice declare his intention and ability to load it within the time allowed. During the months of September, October and November the time limit for loading is 24 hours. For the balance of the year 48 hours is allowed. If an applicant does not actually begin loading within 24 hours after declaring his intention to do so, his order is cancelled and the car awarded to the next applicant. This system places upon the farmer the direct responsibility for ordering his own cars. He can no longer rely upon the elevator agent to look after this detail for him. On the other hand, except at certain Manitoba points, where cars are usually plentiful, by eliminating the belief that favouritism was being displayed in allotting cars the Car Order Book has had the general support of the grain growers.

IV. HANDLING THE TRAFFIC.

While handling the grain traffic as it pours in upon them, the railway companies must also meet the requirements of their regular freight service. For instance, it must provide for a heavy movement in coal during the fall season. An important feature of efficient grain handling is the routing of cars by the most expeditious routes to the terminals and back to loading points. Grain cars on the average make five round trips from the terminals to the grain fields and back. This is sometimes referred to as a shuttle service, a rather misleading figure of speech, for it suggests that the routing and handling of traffic is a matter of much greater simplicity than in actual fact it is.

In practice, although the routing of grain from every shipping point is carefully detailed with reference to Winnipeg, or, if billed to the Pacific Coast, to Edmonton or

Calgary, and although the traffic moves from branch line to main line and from divisional point to divisional point according to predetermined plan, the tonnage of trains is often changed at different points on a long trip. Varying grades and curvatures and the class of engine available upon the division determine the tonnage of trains. Each part of a division has its own rating for freight hauling purposes. On some lines of a division a freight train of 30 loaded cars may be the maximum; in other sections it may reach 75 cars or more. Since the aim of the operating department is to move the largest number of tons of freight with the fewest number of train miles, grain trains are added to or reduced in tonnage to meet the requirement of divisional or sub-divisional ratings. This is one reason why solid trains are not operated from remote points in the grain belt to the terminals.

In the second place, trains are inspected at divisional points for leaking cars. These are cut out and placed upon the repair track. Again, there are several centres of milling in the prairie provinces and cars billed to these destinations must be dropped from the train instead of being hauled through. Breakages may occur which make it unsafe to move a car without repairs. All these circumstances conspire to change the composition of trains during the course of their journey to the terminals. In the fall of 1923 at Winnipeg, where hundreds of trains loaded with grain are received at the Canadian Pacific Railway yards, only one train that came in from the west that season went through intact. It was reported by the trainmen as "something that had never been known before." On the Canadian Pacific Railway, trains enter Winnipeg from the west with 4,500 tons, and are sent out to the east with between 4,000 tons

and 4,350 tons. These eastbound trains may be again broken at the sub-divisional points of Kenora and St. Ignace before they reach the head of navigation. On the Canadian National lines, trains of 3,300 tons are moved east from Winnipeg to Sioux Lookout. From Sioux Lookout to Fort William the grade is heavier and the tonnage is lightened.

During the grain moving season the Winnipeg yards are a scene of intense activity. The Canadian Pacific Railway's yards at Winnipeg are claimed to be the largest in the world. They comprise 300 miles of track with a working capacity of 10,000 cars. The Canadian National lines have yards with a working capacity of 6,000 cars. Trains of cars loaded with grain converge upon Winnipeg from all parts of the grain growing region. These trains on arrival are broken into at anywhere between 15 and 30 places. Leaking and damaged cars are segregated; cars intended for local mills are cut out. Finally, the outgoing train is made up. Winnipeg is also the chief inspection point for the federal inspection service, and official sampling crews open the cars and reseal them after removing a sample for grading purposes. The usual period of detention of cars at Winnipeg is from three to five hours.

During the months of October and November, trains are sent out from the Winnipeg yards at a rate about as close as operating circumstances east of Winnipeg permit trains to move. At the intermediate coaling stations or water tanks on the lines one train pulls out as another pulls up. Cars are moved to Fort William from Winnipeg in an average of from 36 to 40 hours. At Fort William there is a receiving yard of ten long, and four short tracks. The cars go on to the classification tracks and from there are distributed to the various elevators to which they are billed.

V. LEAKAGE IN TRANSIT.

One of the bugbears of handling grain in bulk to the railways is the danger of loss by leakage. Grain will flow so easily that a trifling amount of damage to a loaded grain car may lead to considerable loss before the defect is noticed and repaired. As we have already seen, every precaution is taken to ensure that the car is sound and grain tight when delivered to the shipper. The Car Order Book provides, on its part, that a car shall not be deemed to have been awarded to an applicant unless it is in a proper condition to receive grain. Further, the railways issue standard instructions to their agents that they must inspect cars for defects which may cause loss of grain during transit. Country elevator agents and individual farmers are requested to make sure that the cars are in good condition before loading.

As an extra protection against loss, cars are frequently "coopered" with thick brown paper by shippers to insure that the full quantity loaded will reach its destination. The most slippery type of grain to handle in bulk is flax seed, and it is only accepted by the railways for shipment in bulk at the owner's risk of leakage unless the car is specially lined with four sections of strong paper which fit the four corners and sides of the car. These linings are supplied by the railways and entail a special charge of four dollars per car.

Although the loaded cars may leave the shipping point right and tight, a considerable percentage develop leaks during the long journey to the terminals. A very minute crack or hole will cause a noticeable leak. The number of cars that reveal defects during transit is surprising, though perhaps not to be wondered at in view of the rush conditions under which this freight traffic is handled. In his annual report for the crop year, 1930-31, the Chief Weighmaster at

Fort William states that 29,367 cars, or about 17 per cent of the total cars inspected were reported leaking. This number is not exceptional.

Since leakages mean deficient outturns when the cars are officially weighed at the terminals, they give rise to claims upon the railways to make good the losses suffered by the shipper. Hence great care is exercised by the railways to detect leaks and to stop them as soon as discovered. The cars are inspected immediately upon their arrival at each divisional point. In addition to that, the train crew must examine the cars at certain inspection points for leaks or any other defects that may be apparent. Standard instructions are also issued to section men and station agents to examine trains as they pass by in transit. If a car is leaking, they must take steps to stop the train at the next station, and the car must be repaired before the train pulls out. Finally, when the cars reach Fort William they are inspected by government inspectors who make a report to the Chief Weighmaster with respect to any cars that may be discovered leaking.

The shipper is not informed of the discovery of a leak in his car by the railway company. His basis of claim is usually the discrepancy between the amount weighed into his car at the country shipping point, and the official weight recorded when the grain is received at the terminal. If the grain has been shipped over a loading platform and not weighed at that time, it is difficult to establish the amount actually shipped. However, the farmer may protect himself to some extent by measuring the depth of the car when loaded, and calculating the cubic contents of the shipment. In this way, a rough computation of the total number of bushels loaded is possible. The railway employees report all leaks to the Claims Department of the railway, but naturally the railways do not invite claims. They object to making any report.

as a matter of routine to the owners of the shipments. They argue that in many instances very little grain is lost before the leak is discovered, and if all leaks were reported to the shipper extravagant claims would be preferred, and they would be embroiled in endless controversies over trifling losses.

However, as a result of complaints to the Board of Railway Commissioners, an arrangement in the nature of a compromise was effected. The railways agreed that when a person had an interest in a shipment of grain, he could obtain without difficulty all information the railway had in connection with it. Where the outturn of a car is less than expected, the elevator company, broker, or the farmer himself, writes to the railway company for a report on car number so-and-so, to see if there have been any leakages in transit. If the

inquirer has an interest in the car, the railway handling report is furnished. And of course if it develops that a leakage has occurred, this fact becomes the basis of a claim against the railway to make good the estimated loss. Professional claims agents are sometimes employed by shippers to investigate shortages in outturn and push claims for losses.

VI. BULKHEADED CARS.

A car is said to be bulkheaded when it is divided into compartments by partitions to enable two or three grades or varieties of grain to be shipped in a single car. This method of shipment is sometimes employed by small farmers, or farmers who are engaged in mixed farming and have not large quantities of grain to ship. The volume of grain shipped in bulkheaded cars is small, being less than two per cent of the traffic.

The additional costs to the farmer of shipping a car that is bulkheaded are (1) the price of the lumber used in con-

structing the partitions, (2) a railway charge of one cent per hundred pounds over the regular shipping rate for grain from his point of shipment, and (3) a charge of \$5 at the terminals to cover the extra cost of unloading. It is claimed that these expenses practically nullify the benefit that might accrue to the farmer by shipping his grain to the terminals instead of disposing of it to the local elevator company at "street" prices. In other words, the expenses of shipment by bulkheaded cars is almost equivalent to the spread between "track" and "street" prices at the local point.

One element in the situation is the increasing size of cars employed by the railways in transporting grain. Twenty years ago cars with a capacity of 40,000 pounds were in common use. Then cars of 60,000 pounds capacity were introduced. These were followed by cars of 80,000 and 100,000 pounds carrying capacity. To-day many cars have a capacity of 120,000 pounds. The average car of grain inspected in western Canada in 1928-29 contained 1,448 bushels compared with approximately 1,170 bushels twenty years earlier. Hence a farmer who wishes to ship by the car lot must have a larger quantity available for shipment than formerly. Otherwise he will encounter difficulty in obtaining a suitable car. This is one feature of the situation out of which a grievance concerning bulkheading has developed.

The problem has wider aspects than appear on the surface. For some years the farmers of the west, particularly of the province of Manitoba, have been urged to pay more attention to mixed farming. In certain sections mixed farming has made considerable progress. Now, mixed farming by its nature means that considerable amounts of grain are fed on the farm and also that less grain is actually cultivated. The mixed farmer has not large carloads of a

single variety or grade to ship to market. One of the discouragements he meets in swinging away from grain growing exclusively is the higher costs of shipping grain in bulk-headed cars. On the other hand, there can be little doubt that the larger cars are more efficient carriers of grain, and represent more up-to-date equipment on the part of the railway companies. Hence, we have a conflict between two trends, both excellent in themselves, but working at cross purposes—efficiency in railway operation and a shift away from one-crop farming to diversification.

Apart from these considerations it is a fact that bulk-headed cars tend to slow up the traffic at the terminals, where they are frankly regarded as a nuisance. They create difficulties for the inspection service; they also delay the process of unloading cars. The cars cannot be unloaded at one operation. Time is spent in removing the bulkheads. Moreover, in some instances the railway claim the cars are damaged by careless work in bulkheading, such as using heavy spikes in the lumber. Thus, however valuable the right to ship grain in bulkheaded cars may be to the small grain grower or the mixed farmer, they are not welcomed by the railways, the terminal elevators or the federal inspection service.

VII. RAILWAY RATES ON GRAIN.

For many years the grain growers of western Canada have had the great advantage of a relatively low railway rate on grain for export. In 1897 the government of Canada entered into an agreement with the Canadian Pacific Railway Company, whereby the railway was granted a charter to build a line from Lethbridge, Alberta, through the Crow's Nest Pass to Nelson, British Columbia. In addition it was given a subsidy of \$3,500,000 and a land grant. In return,

the railway company agreed, among other rate concessions, to reduce the then existing rates on grain from the grain belt to the head of navigation on Lake Superior by three cents per hundred pounds. The reduction was to be spread over two years. This brought the rate on grain from Winnipeg to Fort William down to 14 cents per hundred pounds. The rate on grain thus became a statutory rate fixed by special act of the parliament of Canada.

Following this reduction, the government of Manitoba in 1901 executed an agreement with the Canadian Northern Railway Company, by which there was granted that system certain bond guarantees and a lease of a desirable section of railway line. In return, the Manitoba Government exacted a further reduction in grain rates. The rate from Winnipeg to the lake ports was to be reduced to 10 cents per hundred pounds, that was four cents below the existing statutory rate of 14 cents per hundred pounds. The Canadian Pacific Railway Company and the Canadian Northern Railway Company were in competition for the carriage of grain, and this reduction involved for competitive reasons a reaction upon C.P.R. rates. The Canadian Pacific agreed to a reduction, and as a result the ultimate arrangement made with the Government of Manitoba was that the grain rate should be three cents below the statutory rate instead of four cents as originally decided upon. This Manitoba agreement, as it was called, was validated by an act of the federal parliament, but this act differed from the act setting forth the Crow's Nest Pass agreement in one important respect. It expressly stated that the powers of the Railway Committee of the Privy Council, or any commission succeeding to its powers, should in no way be limited. Practically, the effect of these two agreements was to give the farmers of the Canadian west a relatively low rate on grain for export. This was

considered to be sound public policy, for it was recognized that heavy transportation costs handicapped the western farmer in placing his products upon the world's market.

This basis for railway rates stood for over a decade, but when markedly rising costs of railway operation during the war period made an advance in freight rates imperative, the Board of Railway Commissioners abrogated the agreement made between the railways and the government of Manitoba. This permitted a certain rise in rates, but was not found sufficient to meet the needs of the railways. Thereupon the federal parliament in 1919 suspended the operation of the Crow's Nest Pass rates for three years, and the Board of Railway Commissioners granted advances in grain rates of 25 per cent and later of 40 per cent. At the end of the three years, however, the suspension of the agreement in so far as it affected east bound grain and flour rates was removed. The basic rate of fourteen cents per hundred pounds from Winnipeg to the Lake ports again became effective.

This is the basic rate that is in effect today, and it means that the farmers of western Canada enjoy, relatively, a very low rate on grain. When the original agreement was signed, the wheat movement eastward was not over 20,000,000 bushels, compared with over 400,000,000 in 1928. In 1897 the wholesale index number, measuring the level of general prices (basis, 1913, 100) stood at 75.6 compared with approximately 151 in 1928. Although general prices had doubled in the meantime, the farmer paid the same export freight rates on grain. It is thus apparent that when the government of Canada entered into the original agreement in 1897 and included therein a clause designed to secure cheap transportation for Canadian grain from western Canada, they builded better than they could reasonably foresee. The Crow's Nest Pass Railway agreement has come to be con-

sidered with some truth by western farmers as their charter of low freight rates upon grain. Eastbound rates upon flour and grain are the only freight rates in Canada now fixed directly by a federal statute. There is no doubt that low freight rates upon grain have been a large factor in the growth of agriculture in the Canadian west.

The general rate structure is built up on the basis of mileage, without allowance for the difference between main line and branch line traffic. A few representative rates will reveal the general character of the structure. The rates from Edmonton, Calgary and Macleod on the western edge of the grain belt are 26 cents per hundred pounds. The rates from Saskatoon are 22 cents and from Medicine Hat 24 cents. Regina and Moose Jaw have a 20 cent rate. The rate from Brandon is 16 cents and from Portage la Prairie 15 cents. In terms of cents per bushel this means a rate on wheat from Edmonton of 15.6 cents and from Portage la Prairie of 9 cents.

The opening of the Panama Canal made it possible for western Canadian grain to move to Europe through Canadian ports on the Pacific Ocean. After the war this traffic began to develop. Grain shipments to the Orient also increased in growth. This raised the question of proper export rates for grain shipped by this route. For some time the rates were higher than those effective on grain moving eastward under the Crow's Nest Pass Railway agreement. This situation led to a lively agitation by the government of British Columbia for rate reductions. In September of 1925 an order was issued by two members of the Board of Railway Commissioners to the Canadian Pacific and Canadian National Railways, requiring them to file tariffs reducing the rates on grain and flour within Canada for export to Pacific ports to the same rates as such grain and

flour would carry if moving eastward for export. An appeal from this decision to the full board was taken by the Montreal Board of Trade and others. The question ultimately became part of the General Freight Rate Investigation conducted by the Board of Railway Commissioners during 1926. As a result of this investigation the Board declined to rescind the order of 1925, but permitted the Canadian Pacific Railway, in compiling rates upon grain and flour, to assume a mileage from Calgary to Vancouver of 766 miles instead of the actual mileage of 642 miles. The mileage of 766 miles is the distance on the Canadian National line from Edmonton to Vancouver. This part of the decision equalized the rates from these two cities which are the gateways through which traffic moving from the prairie provinces to the port of Vancouver must pass. Subsequently the Canadian National Railways filed tariffs granting rates on grain to Prince Rupert equal to those fixed for Vancouver.

The practical effect of this decision has been to increase the flow of grain from the province of Alberta, and from part of the province of Saskatchewan moving to market by the western route. The rate on grain from Calgary and Edmonton to Vancouver is 20 cents per hundred pounds. We have already seen that the rate from these cities to Fort William is 26 cents per hundred pounds. It must be remembered, however, that in both instances these charges are only part of the total charges that grain shipped from western Canada must undergo before it reaches its ultimate market. It is the total expenses of transportation and handling between producer and consumer that determines the direction grain for export will take.

In connection with the charges on grain, all cars have a rating of minimum capacity. The general condition is that it is possible to load cars up to this minimum capacity. All shipments are charged for at actual weight when they are in

excess of the specified minimum. When the actual weight, however, is less than the specified minimum the minimum weight is charged. Cars are marked with their minimum capacity and as a rule the specified minimum for grain corresponds with this figure. As the cars become larger, however, the specified minimum for grain is somewhat less. Thus with cars of 100,000 pounds capacity or over the specified minimum for the various varieties of grain is as follows: barley, 100,000 pounds; buckwheat, 115,000; flaxseed, 115,000 pounds; oats, 80,000; rye, speltz and wheat, 115,000 pounds. Oats are a general exception; the specified minimum for a sixty thousand car is 56,000 pounds, for an eighty thousand car, 60,000 pounds. As it frequently happens in the stress of the season that refrigerator cars are used for the company's convenience in the transportation of grain, and as such cars will not as a rule load to the full minimum prescribed, the charges are on the basis of actual weight when the cars are loaded to full visible capacity.

VIII. STOPPAGE OF CARS IN TRANSIT.

The railways have developed specific rules and conditions whereby grain can be shipped for milling, malting, storage and cleaning to given points, and then reshipped on the balance of the through rate. The charge for this privilege is one cent per hundred pounds for the extra terminal services. The local rate is made to the point where the stoppage in transit privilege is exercised, and when the shipment is made outward the balance of the through rate is charged. Actually, returns are made to the railways twice a year. In the interval, shipments out are cancelled against shipments in, with the proviso that shipments out of one kind of grain will not be accepted against inward shipments of a different kind. The stoppage in transit privilege is in effect both for grain and flour moving out for export, and for grain

which is milled, malted or cleaned, and then shipped onward to another point. In the latter instance, the commodity rate from the point of origin of the shipment is the basis of the total charge.

Finally, the Canada Grain Act provides that grain in carloads offered for shipment to points in Canada may be held at Winnipeg, Calgary, Edmonton, Moose Jaw, Saskatoon or Fort William and Port Arthur for orders en route to its destination in the direct line of transit. The shipper must pay the agent of the transportation company the sum of three dollars per car, and nominate someone to be advised at the point designated of the arrival of the car. The advisee has 24 hours in which to make disposal of the shipment. The railway carrier will then make the delivery of the grain to team tracks, or industrial spurs or sidings, upon the payment of the current grain rate to the point of delivery. But if the carrier does not receive instructions within 24 hours, the car may be forwarded by the railway to its destination as consigned.

In the event of the grain being delivered, it may subsequently be shipped within six months to any point in Canada, on the balance of the through rate from the initial point to destination, plus one cent per hundred terminal charges, less the three dollars paid at the point of origin of shipment. Should any congestion of traffic arise out of this provision of the Act, the Board of Railway Commissioners may make an order suspending the right, which is, in any case, with respect to Winnipeg and Fort William and Port Arthur withheld during the rush season from the fifteenth of September to the fifteenth of December. The general effect of this provision is that it enables grain to be taken into private elevators at given points, where it may be treated or cleaned before sale or shipment to its final destination.

CHAPTER VII

TERMINAL ELEVATORS

UNDER the Canada Grain Act, a terminal elevator means an elevator in western Canada into which western grain is received after the issue of an inspection certificate. It includes also any elevator in the United States where the Board of Grain Commissioners maintains a service for the inspection of western grain. When a cargo of Canadian grain sold on "Canadian certificate final" arrives at a foreign port, it can be traced back through all the stages of its journey to a terminal elevator in western Canada out of which it was inspected. The quality of the grain received abroad can be checked against the sample taken when the grain was loaded out of the terminal elevator. This elevator may be located at the head of navigation on the Great Lakes, if the consignment has been shipped by the eastern route, or it may be at Vancouver if shipped by the Pacific.

The greatest concentration of terminal elevators in Canada occurs at the head of navigation on Lake Superior in the twin cities of Port Arthur and Fort William. When the Pacific railway was being built through from eastern Canada, it was first decided to make Nepigon Bay the shipping port on the Great Lakes, but this decision was reversed, and Port Arthur on Thunder Bay, and Fort William adjoining Port Arthur on the Kaministiquia River, became the points where grain shipments break bulk in being transferred to lake carriers. Grain is also shipped by rail from the head of the lakes to the eastern provinces. The two

cities are about equal in size, and their combined harbours have a frontage of over 30 miles. They possess 32 terminal elevators with a total storage capacity of 92,847,210 bushels. Together these two cities handle more wheat than any other grain port in the world.

Terminal capacity at Vancouver amounts to 16,450,000 bushels, distributed between 8 elevators. Other important terminal points are Winnipeg and St. Boniface with 15 elevators and 5,022,000 bushels storage capacity; Calgary with nine elevators and 7,185,000 bushels, Saskatoon with three elevators and 8,060,000 bushels; Moose Jaw with four elevators and 7,485,000 bushels, and Edmonton, with six elevators and 2,778,000 bushels storage capacity. Inspection services are also provided at a number of large milling points, such as Medicine Hat in Alberta, and Keewatin and Kenora in Ontario.

In spite of the rapid development of shipments via the Pacific and the construction of a port on Hudson Bay, there seems little reason to suppose that the lake ports of Fort William and Port Arthur will cease to hold their supremacy as the main terminals in Canada for western grain. They are at the point where the railway lines and the lake steamers meet. Writing in 1914, the late Robert Magill, then Chief Commissioner of the Board of Grain Commissioners for Canada, declared: "It is sometimes said that Canada had pursued a mistaken policy in building the large terminal elevators at the head of the lakes, and that she should build them rather at the Atlantic ports. This view forgets two most important conditions, that of inspection and that of alternative markets and routes. It would be very difficult and expensive to have the inspection and delivery at the Atlantic seaports, and to store grain at these ports pending sale would limit the seller to European markets. Inspection

of western grain can be done more efficiently and more economically at Fort William and Port Arthur, and grain stored there can be sold either in eastern Canada, the United States or Europe, and be shipped through either Canadian or United States channels."¹

I. CLASSES OF TERMINAL ELEVATORS.

Terminal elevators are classified as public, semi-public and private, according to the nature of the license under which they are operated. It is the duty of public terminal elevators to receive all grain in a dry and suitable condition for warehousing, for storage, to clean it if necessary, to account for the screenings, to bin it according to grades, keeping each grade separate and unmixed, and to ship out equal quantities of the same grade when called upon to do so by the owner or his assignees.

The distinguishing feature of a semi-public terminal elevator is that the manager is expressly permitted by the terms of his license to bin any grain as he sees fit, except red spring wheat of the four highest grades. Each of these four grades must be binned separately and held unmixed, but otherwise the manager is free to mix or blend grades of grain with a view to building up certain quantities of certain grades. Apart from this privilege, a semi-public elevator is in all respects similar to a public terminal elevator.

A private terminal elevator, as the name implies, means an elevator which is used by the manager exclusively for the storage and handling of his own grain. The classification also includes the pool terminal elevators, that is, terminal elevators which are used by a co-operative association exclusively for the storage or handling of grain either belonging to it, or produced by or received from some one or more

¹Magill, *Grain Inspection in Canada*, p. 52.

of its members. Private terminal elevators have the same privileges as semi-public terminal elevators with respect to mixing, and, are likewise not permitted to mix the four highest grades of red spring wheat.

There are located at Fort William and Port Arthur two public, 26 semi-public, and four private terminal elevators. These last are of small size; their combined total storage capacity only amounts to 190,000 bushels. At Vancouver there are located one public, six semi-public and one private terminal elevators. The latter has a storage capacity of 200,000 bushels. Terminal elevators located at prairie points are all licensed as private elevators, with the exception of the five large interior storage elevators, built by the Dominion Government, and operated as part of the government-owned system under the Board of Grain Commissioners. These elevators are located at Edmonton, Calgary, Moose Jaw, Lethbridge and Saskatoon, and are all operated as public terminal elevators. Those at Calgary and Edmonton have each a storage capacity of 2,500,000 bushels. The two Saskatchewan houses are larger, their storage capacity having recently been increased. They have a capacity of 5,500,000 bushels apiece. The new interior storage elevator at Lethbridge in Alberta, recently completed, has a storage capacity of 1,000,000 bushels.

Public and semi-private terminal elevators are large constructions, with storage capacities ranging as a rule from 2,000,000 to 7,500,000 bushels. Typical elevators of this kind include all of the facilities found in a country elevator, but differ in the size and completeness with which they are installed. The weigh scales vary in capacity from 6 to 75 tons. For the year 1928-29, with 297 scales, approximately 1,154,497,341 bushels of grain were weighed at the terminal elevators at Fort William, Port Arthur and western points. Scale mechanics keep the scales accurate and in good condi-

tion. When cars of grain are placed on the elevators' siding, a winch is employed to pull them up to the scales as required. The newer elevators are equipped with machinery to unload cars by lifting them and canting them from side to side until they are empty. Recently, all the terminal elevators have been fitted with automatic samplers. A terminal elevator requires from 150 to 200 horse-power to operate it. Electric power transmission is used throughout.

The grain, when received, is raised by buckets on heavy belts to the workhouse, which in these elevators is located at the top of the building. After being weighed it is distributed by wide belts, which carry the grain horizontally along the top of the bins until diverted by a "tripper" to the bin to which it is consigned. Large shipping bins are designed to take care of the shipments outwards. From these bins the grain is spouted by gravity to the hold of the vessel. Some elevators are able to employ for one vessel as many as five or six spouts at the same time. In addition to the handling and weighing apparatus, the elevators are all equipped with machinery for cleaning grain. The majority also have drying facilities. At the head of the lakes, 28 of the 32 terminal elevators have installed driers. These have a combined capacity for drying tough grain of 32,900 bushels per hour.

The older elevators are built of wood, but the later ones are of concrete construction throughout. All the elevators are divided into bins, the largest containing as many as 750. The large modern bins are circular in form, and in appearance are like huge sewer pipes standing on end. They are arranged in double rows. The spaces between the bins are also utilized for storage. In this way they are able to withstand the heavy pressure of the grain inside. The grain is withdrawn from the bins at the bottom, and carried on belts

to the sinks, from which it is elevated to the workhouse. The larger elevators are capable of amazing performances in handling grain. The record performance of the Northland elevator, one of the largest at the lake ports, is the unloading of 314 grain cars in 20 hours. This elevator can discharge wheat through eight spouts, into lake boats at the rate of 100,000 bushels per hour.

Both the public and semi-public terminal elevators receive farmers' grain for storage, and at the ports they are located on the waterfront, where they can deliver export consignments directly to vessels. The private terminal elevators are usually away from the water front, and are usually engaged in specialized lines of business. Often they are an adjunct to a milling industry; they blend and treat grain, deal in coarse grains for stock food; essentially they are industrial plants rather than storage warehouses. At inland points they often act as distributing centres for local needs. Where, however, grain from a private elevator is shipped out to become part of the general export stock of the country in a public or semi-public terminal elevator, it must conform to the export standard of quality.

II. EVOLUTION OF THE PUBLIC TERMINAL ELEVATOR SYSTEM.

The classification of the terminal elevators set forth above is in accord with the provisions of the Canada Grain Act of 1930. There have been changes, however, in the organization of the terminals, with every revision of the Canada Grain Act. These changes have not always represented a logical line of evolution, but rather are to be accounted for by different theories of terminal elevator control. The original scheme was a public elevator system, where grain would be stored under the same general safeguards that apply to other classes of goods when placed in a warehouse.

The managers of public terminals were forbidden to deal in grain, and were responsible for the safe delivery of stocks placed in their keeping. The cheapness and convenience of storing grain in bulk led to one difference between the terminal grain elevator and the ordinary warehouse. With the ordinary warehouse, the identical goods placed in storage must be returned, but unless special arrangements were made, any person storing grain in a terminal elevator received back grain of the identical grade, but not necessarily his own grain, as all grain of the same grade was stored in a common bin. In another respect also, the terminal elevators differed from ordinary warehouses. All grain, except sample shipments or certain classes of mixed grain, was required to be cleaned while in the terminal elevator.

The Canadian export trade in western grain was originally built up on the theory that the grain shipped when properly cleaned should represent the fair average quality of the grades as defined by the Grain Act. It was realized that in practice grain from country points examined by the inspection staff, would show considerable variations in quality, while falling within the general limits of a given grade. Thus, while a carload of wheat might weigh exactly 60 pounds to the measured bushel, and because of its sound quality be eligible for the grade of No. 1 Manitoba Northern, yet it was foreseen that many carloads would exceed this weight per measured bushel and would fall into the No. 1 class also. Hence, it was an essential part of the system that grain of a given grade, after being officially weighed and graded, should be placed in the common bins of the public terminal elevators. The contents of these bins, representing grain classed in given grades and coming from all parts of the grain belt, could fairly be held to be in each instance the average of the grade. Such grain would necessarily be

of higher quality and weight than the minimum of the grade as defined in the act. The common bins of the public terminal would contain grain running from the minimum to better grain that just escaped being placed in a higher category. Grain buyers obtaining the grain from store would thus obtain the average of the grade rather than the minimum. It was under this system of delivering grain from the common bins of the public terminals in fulfillment of sale contracts, that western Canadian grain won its high reputation on foreign markets.

Nevertheless, the actual operation of such a system had its difficulties. Year after year there were criticisms of the terminals, and from time to time investigations took place. The Royal Commission on the Grain Trade in 1906 made a lengthy investigation into the operation of the terminals. While it did not recommend government ownership and administration, it declared there was need for stricter supervision. In 1909, the Chief Warehouse Commissioner conducted an investigation, and found that certain public terminals were obviously guilty of mixing grades and of making false returns. In 1918, under the authority of an order-in-council of the federal government, an accounting firm made an investigation into the profits of the terminal companies, and reported large earnings from the sale of screenings and overages. In 1923-24, the Royal Grain Inquiry Commission made further investigations. In the main, the same complaints re-appear on successive occasions. They centre on the alleged lack of sufficient supervision of the operation of the terminals, on the alleged mixing of grades, and on the creation of overages, either by the terminal elevators failing to clean the grain thoroughly, or by manipulating the weights. Successive revisions of the Grain

Act have attempted to remedy any defects in method that were revealed.

In 1901, a warehouse commissioner with jurisdiction over terminal grain elevators had been appointed, and the establishment of the Board of Grain Commissioners in 1912 was intended to give increased supervision of the public terminal elevator as one phase of its duties. The act of 1912 also foreshadowed the construction of public terminal elevators by the Government of Canada, and provided that, in the event of such elevators being built, they should be operated by the Board of Grain Commissioners. This was in response to strong demands for the nationalization of the grain terminals. In 1913, on the recommendation of the Board of Grain Commissioners, a public terminal elevator with a storage capacity of 3,250,000 bushels was constructed by the Government of Canada at Port Arthur. The erection of this large terminal elevator, and its operation under the Board of Grain Commissioners, was designed to strengthen the control exercised by the Board over all the terminal elevators. It was considered it would give the Board first hand information about the cost of construction and of operation, as well as about every phase of the business of storing public grain.

The system of supervision over public terminal elevators which the Board of Grain Commissioners found in operation at the time of its establishment, was based on the bin records of the grain stored therein. Inspectors and their assistants endeavoured to keep records of all the grain shipped into and out of the individual bins. The system, upon investigation by the Board, was found cumbersome, expensive, and quite useless with respect to the purpose in view, namely, to prevent illicit mixing of grades. It thereupon decided to

rely upon a different method of supervision consisting of (1) the compulsory registration and cancellation of all warehouse receipts, and (2) an annual audit or weigh-up of each public terminal elevator. In this way, it was believed that the duty of the elevator to preserve the identity of the different grades of grain would be much more effectively controlled. If, as a result of the annual weigh-up, a surplus or overage of grain was shown, the elevator was authorized to issue warehouse receipts to itself and thus clear the house. If a shortage was disclosed, the elevator must make good the deficiency. No large surplus or deficiency in any grade was contemplated, and if it occurred, was to be considered *prima facie* evidence that the provisions of the Act against mixing were being evaded.

III. THE PROBLEM OF OVERAGES.

Towards the end of the great war period, rumours began to circulate among the western farmers that the public terminal elevators were in receipt of very large profits from grain surpluses. This created a great deal of dissatisfaction, and it was currently believed that these overages could only come from a failure to observe the rules that govern this class of elevator. Finally, the federal government caused an investigation to be made. The order-in-council stated that the purpose was "to assist the government in deciding as to whether the grain surpluses which annually result in the operation of the said elevators shall be continued in whole or in part as a source of necessary income to enable the elevators efficiently equipped to make any addition to their other earnings as a reasonable compensation on the outlay of capital and business management put into the enterprise."

An audit was made which covered twelve public terminal elevators, and this audit showed that the overages had

become an important source of income. The value of the overages for these elevators for the season of 1915-16 was shown to be \$1,187,604 and for that of 1916-17 to be \$2,047,159. These figures left out of consideration any profit or loss from option sales in connection with overages. Among the elevators included in the report, was the elevator owned by the Dominion Government and operated by the Board of Grain Commissioners. For the season of 1916-17 the value of the overages from that elevator was placed at \$332,187. It must be remembered, of course, that the value of the overages was contingent upon the very high prices of grain which prevailed during the war period. Still, it was clear that the elevators were securing an important amount of revenue from this source.

The elevator companies contended that the creation of overages was a normal aspect of the operation of public terminal elevators handling grain upon a large scale, and was not due to any definite line of action taken to secure them. Overages, it was said, happened because of certain general features of the method of handling grain. It was pointed out that, in cars of high grade grain which contain a small proportion of foreign matter, the inspector almost invariably placed a dockage of one per cent. Dockage is not stated in fractions. For instance, if the inspection showed foreign matter of from two per cent to three per cent, a dockage of three per cent would be placed upon the car. But while the percentage of dockage placed on a car was calculated to eliminate all foreign matter, it was a fact that the grain leaving the elevators contained a certain small proportion of dust, although the grain was deemed to be "commercially clean." It was also noted that the overages occurred chiefly in the higher grades of wheat. The explanation offered here, was that cars were given a one per cent

dockage when in fact the dockage was less than one per cent. And in this connection it was observed that in the seasons under review the crop was mostly high grade grain. Finally, the elevators showed that they were able to recover a certain amount of grain from screenings that had been paid to them in lieu of a tariff charge for the service of cleaning. There was to be considered also, it was claimed, surpluses arising from the official shrinkage allowed for waste while handling. The more efficiently the elevator was operated, the less actual shrinkage would occur.

The conclusion to be drawn from these contentions was that under the prevailing rules and tariffs, any efficiently managed public terminal elevator should show an overage. It would also be possible for such an elevator, by not using sufficient care in recovering good grain from its screenings, to show a deficit in grain at the end of the season, but, in such an instance, the revenue from screenings would tend to be above normal by reason of the quantity of good grain left therein. The investigators noted that there did not appear to be any uniformity in the percentages of overage to grain handled by the several companies in any one year, or by any individual company during the five years under review. This was explained as being due to the fact that, in any one year, each of the companies received its grain from different localities, and therefore in different states of cleanliness, and that, although any individual company might receive its grain from the same locality each year, the condition of the crop in different seasons would render a comparison of overages altogether ineffective. Finally it was suggested, as an additional cause of variations in the amount of overages, that where grain in storage goes bad, an elevator company sometimes prefers to stand a shortage rather than admit loss by depreciation.

The federal administration in effect accepted the contention that overages were a normal, if accidental, feature of terminal elevator operations, and procured an amendment to the Grain Act in 1919, which provided that in the month of August each year, stock should be taken of the quantity of each grade of grain in the public terminal elevators. If in any year the surplus of grain was found to be in excess of one-quarter of one per cent of the gross amount of the grain received by the elevator during the crop year, then such surplus was to be sold annually by the Board of Grain Commissioners, and the proceeds paid to the Board. The proceeds were to be applied to the cost of administering the Grain Act.

The validity of this measure was soon challenged in the courts. The terminal elevator company in the case submitted that it had delivered to the owners all grain inspected and weighed into its elevator according to the certificates of the official inspectors and weighmen respectively, as represented by its issued terminal warehouse receipts: that, having extinguished the right and title of all persons in both the grain and the screenings, the remainder was its property, earned under, and by virtue of, the tariff charges set and allowed by the Grain Act. It held that the title to the same could not be taken from it by any legislation enacted by the Dominion of Canada.

This contention was sustained in the Exchequer Court of Canada. The trial judge held that the reason for the enactment of the section in question was obviously to limit the amount and value of grain surpluses to be earned or acquired by terminal elevators in any one year, and that it was an attempt to regulate profits, or dealings which gave rise to profits. On the constitutional ground that the legislation did not come within the powers of parliament, but

necessarily came in conflict with property and civil rights, powers assigned to the provinces; he dismissed the case against the elevator. An appeal to the Supreme Court of Canada suffered the same fate. However, Mr. Justice Duff, of this court, observed that in his opinion there was one way by which the Dominion might acquire authority to regulate a local work such as an elevator; that was by a declaration, properly framed, declaring it to be a work for the general advantage of Canada.

The Dominion Government carried an appeal to the Privy Council. In the meantime, in 1925, the Canada Grain Act had been revised. By that revision, with a view to strengthening the federal government's power of control, all elevators were declared to be works for the general advantage of Canada. The section covering overages accumulated in the public terminal elevators was re-enacted. The constitutional soundness of the right claimed by the Government of Canada to expropriate overages has never been settled by a decision of the Privy Council. When the appeal, carried by the Dominion Government from the Supreme Court of Canada to the Privy Council, came up for hearing, in view of the circumstances that the appeal had been lodged against a section of an act that had later been repealed and replaced by the statute of 1925, the case was not argued. The revised Grain Act of 1930 extends the provisions of this section to overages which may occur in semi-public and private terminal elevators in the four non-mixing grades of red spring wheat.

No appeal being taken by the public terminal elevator companies to the legislation of 1925, the Dominion Treasury is given the proceeds from the sale of overages accumulated in these elevators, amounting to over one-quarter of one per

cent of the grain received during the crop year. Under this legislation there has been received \$173,206.69 for the crop year of 1925-26, \$65,913.26 for the crop year of 1926-27, and \$14,483 for the crop year of 1927-28. There were no overages for the crop year of 1928-29. Approximately 65 per cent of the total amount received from this source for those years was derived from public terminal elevators owned by the Dominion of Canada. The decline in receipts appears to be due partly to the great reduction in the number of public terminal elevators, partly to more careful determination of dockage in initial grading, and partly to the export of grain more thoroughly cleaned. It is possible that there may be some increase in returns in future years, on account of the recent extension of this provision of the Grain Act to the four non-mixing grades of red spring wheat to all terminal elevators, whether licensed as public, semi-public or private.

IV. RISE OF THE PRIVATE TERMINAL SYSTEM.

While the regulations that governed public terminal elevators were being more carefully worked out, and, while in this connection, more effective methods of supervision were being developed, there was growing up at Fort William and Port Arthur another system of handling grain. This was the private terminal elevator system. The distinguishing feature of the private terminal elevator was the practice of mixing or blending grades. Between 1925 and 1930 the private terminal elevators enjoyed full legal sanction for this practice and occupied a dominant position at the main terminal points in Canada. The amount of grain handled through them was very much larger than that passing through the public terminal elevators. For the crop year ending on July 31 of 1929, the receipts at the head of the

lakes by the public terminal elevators were approximately 87,000,000 bushels, and by the private terminal elevators 322,000,000, or about 79 per cent of the total.

The amendment to the Grain Act in 1929 and the comprehensive revision of the statute in 1930, by prohibiting mixing in the first four grades of red spring wheat, curtailed sharply the rights conferred in the private terminal elevators by the Act of 1925. The legislation of 1929-30 represents a compromise between conflicting theories of marketing and conflicting interests. The new class of semi-public terminal elevators, which might equally well be called semi-private terminal elevators, permits mixing in all grades and varieties of western grain except as above noted, but has the right to store farmers' grain without securing special permission to do so. The private terminal elevators under the act of 1930 are not allowed to receive any grain that does not belong wholly to them, nor are they permitted to mix the prohibited grades.

The various legislative steps leading to this position are part of the history of the Canadian grain trade. Behind the regulations that governed public terminal elevators, was the belief that the interests of the Canadian grain growers and of the Canadian grain trade would be served best by putting on the export market, when properly cleaned, grain of the average quality of the grades as they are determined at initial inspection points, the samples for grading being selected while the grain is in transit from the point of original shipment to the terminals. This belief was based on broad consideration of public policy. It emphasized the importance to the grain growers of producing grain of high quality by assuring them that the reputation of Canadian grain in foreign countries rested in their hands. From the very first the principle of keeping all grades of grain separate at the

terminals has had the support of the great majority of Canadian grain growers.

It also commanded in the past the approval of public men and others who had made a study of the problem. W. C. Van Horne, of the Canadian Pacific Railway, writing in 1892, when the western grain trade was in its infancy, said: "The manipulation of grain at terminal or transfer houses I hold to be wrong in principle. The practice in many of the private elevators in the United States has been a source of scandal." In March of 1899 the council of the Winnipeg Grain and Produce Exchange passed the following resolution: "The Exchange expresses its positive conviction that no mixing of grain should be permitted at terminal elevators and also that no mixing should be permitted in a cargo shipment unless the inspection certificate issued therefor shall have written across the face a statement defining the various grades entering into the composition." This resolution received the hearty approval of the Board of Grain Standards. At the twelfth annual meeting of the Exchange in 1900, the Exchange passed a motion urging that "no straight certificates be issued for wheat shipped out in mixed cargoes." In 1906 the Royal Commission on the Grain Trade in Canada observed, anent the proposal to establish sample markets, that one objection was that such a market would entail mixing. It said further: "It seems to be the opinion of the majority of the producers, the grain dealers and the millers, that our present grading and inspection system should be retained in its entirety."

Between 1906 and 1920 the views of the trade underwent a change. The president of the Exchange in 1913, referring to the proposed establishment of sample markets, said: "I hope and predict that the day is not far distant when an elevator owner, grain dealer, farmer or any person owning

grain, can mix it to his liking, and then after doing so take his chances with the inspector." The swing away from a public terminal elevator system began with the recognition of the need for hospital elevators for the treatment of grain that would not grade into the official grades. This problem arose quite early in the development of the trade. It is quite true that in the early days there were a few small private elevators at Winnipeg and at Emerson that mixed grain after it had been inspected and graded by the inspection department, but these houses had really no standing as part of the recognized legal warehousing system for handling grain. They mixed their own grain and disposed of it in various ways. But on account of the vicissitudes of climate and the wide area over which grain is cultivated in western Canada, a greater or less amount of grain from year to year comes on to the market in bad condition, or is of low grade. For instance, in the crop year of 1926-27 there were inspected 242,394 cars of Canadian Northern spring wheat of the hard red varieties, but of this number only 88,600 carloads, or a little over one-third, were graded No. 3 Northern or better. Of the balance, 128,917 cars were certified to be of no grade because of excessive moisture; 9,687 cars were found to contain sprouted grain; 8,084 cars were graded No. 4 Northern, and the remainder were put in low grades on account of being smutty, heated or in other ways lacking quality. It is obvious that if grain reaches the terminals carrying excessive moisture, it should be dried so that it can be placed in storage without danger of spoiling. Methods have been devised of washing or scouring grain tainted with smut, and of thus putting it into better shape to find a market. An elevator especially adapted to dry, clean and wash grain was constructed before 1900 at Port Arthur.

The first elevator erected for this purpose was called a hospital elevator, and its usefulness to the trade and to the grain grower was quite clearly recognized. Nevertheless the statute did not permit the issuing of straight grade certificates on grain that was shipped out of a hospital elevator. Straight grade certificates were reserved for grain that met the requirements of the grade after cleaning but without drying, scouring or other treatment. In contrast thereto it was provided that grain coming from a hospital elevator must receive a grade below No. 3 Northern, and that the certificate must bear on its face the notation, "scoured" or "dried", as the case might be. This grain found a market, but it was a special market outside the main flow of trading in wheat. Certain traders specialized in dealing in this type of grain and would buy and specially store such grain until they had accumulated a shipment; they were able to sell it to millers of a certain type who knew how to use it, and who took advantage of the low price at which it could be bought. While under the public terminal system off grades in this way found an outlet, it was hard on the farmer whose crop had turned out badly.

Meanwhile, in 1907, the first private elevator was built at the head of the lakes. Two more were built in 1909 and four in 1912. These elevators were small constructions without much storage room; their operators confined their business to handling their own purchased grain, and they could not issue warehouse receipts. Some of them were not located on the lake front. Grain was shipped from these elevators into the public elevators where it was inspected exactly like grain received direct from the grain growing area. Other elevators of the same type had been in operation in Winnipeg. In all these private elevators the grades were not kept separate. The owners were handling their own grain and

were free to mix it as they pleased. It is possible that a certain amount of mixing grades also occurred in isolated individually owned country elevators. It is well known that the large country elevator companies ordinarily do not permit their agents to attempt mixing grades. On account of various complaints as early as 1904 a clause was introduced into the Grain Act providing that, when grain shipped from any elevator was being systematically reduced in quality below the general average of similar grades in the bins of the terminal elevators, the chief inspector should instruct inspecting officers that no such grain could pass inspection except on a lower grade. This provision was undoubtedly aimed at mixing practices.

The situation of the private elevators as they developed was felt to be anomalous, and before 1912 the warehouse commissioner made an attempt to place them under license. Under varying circumstances, individual private elevators were operated as licensed public terminals or as country elevators. In other instances, as strictly private houses, they were operated without any license. Between 1908 and 1912, there was a very strong demand for the entire government ownership of terminal elevators. This demand was intensified by the discovery of grades being mixed in certain public terminal elevators at the head of the lakes. Subsequently the companies operating these elevators were fined for a breach of the Act. When plans for the construction of a terminal elevator by the Dominion Government were announced in 1912, this was considered to forecast a comprehensive programme of government ownership. Actually, as a matter of history, the policy of building government terminal elevators has never gone beyond the point of providing additional facilities.

By the Canada Grain Act of 1912 the position of hospital

elevators was fully covered at law. Hospital elevators were defined as including every elevator or warehouse used for the cleaning or other special treatment of rejected or damaged grain, and equipped with special machinery for that purpose. The Act provided that there might be "such number of hospital elevators as the Board might determine." These hospital elevators were to take out a license and to furnish bonds. Provision was made, however, that grain passing out of a hospital elevator could secure straight grades on inspection. The only limitations were that no wheat that had been subject to scouring, or treatment by use of lime or of sulphur, should be graded higher than No. 3 Northern. Hospital elevators were also specifically made subject to the clause which forbade the systematic reduction in quality of grades below the general average in the bins of the public terminal elevators.

It will be noted that by this change in the regulations, grain that had been dried or treated in a hospital elevator could obtain a straight grade. Parliament, in providing for hospital elevators, seemed to be in some confusion as to whether they came under the rules prohibiting mixing that were imposed upon the public terminal elevator, and the statute on this point was unfortunately left vague. It was possible to interpret the Act to mean that sound grain would be mixed with grain treated or cleaned in a hospital elevator and then be shipped out to receive a straight grade. In practice this was what actually occurred. The private elevators were able to take out licenses under the Act as hospital elevators, and then to mix grain. They operated in this way between 1913 and 1917. The Board failed to put a limit upon the number of hospital elevators licensed, though it pointed out in its report to the government in 1912 that the public terminal elevators were as much hospital

elevators as the so-called hospital elevators. In its report for the following year it stated that there was only one house that could properly be called a hospital, and that this elevator was being operated under a public terminal license. The important point to observe out of all this, is that the attempt to provide for off grade and tough grain led to the development of hospital elevators. When these obtained the right to ship out straight grades, the private elevators secured hospital licenses and gradually absorbed the function of handling these off grades. Thereby they were able to mix grain, and the shipping of grain so mixed under a straight grade certificate became possible at the lake ports.

V. THE LEGISLATION FOR SAMPLE MARKETS.

In addition to legislating for the needs of hospital elevators, the Grain Act of 1912 provided for the establishment of sample markets. For many years sample markets had been widely discussed in the west. The farmers believed that under the grade system of marketing they frequently did not secure full value for their grain. Selling on grade means that a flush grade of wheat may command no greater price on the market than wheat which just falls within the legal minimum of the grade. This is a source of grievance to many farmers. Moreover, when wheat is slightly off colour it loses grade, and the spread in price between grades may be quite marked, much greater, it is believed, than is warranted by any difference in the milling qualities of the wheat. These facts led to the belief that the only just method of selling grain was to sell it by sample. For these reasons there was in 1912 a considerable degree of sentiment throughout the country in favour of sample markets.

People who carefully studied the problem saw that a sample market where grain is exported would necessarily

involve the mixing of grain. With sample markets experienced grain buyers would buy grain on the basis of samples, mix them together, and then demand an official grading for grain for export sale. Now when mixed grain is submitted to an inspector, the aim of the mixer is to submit a quality that will just achieve the grade he aims to secure. As we have already noted, the minimum of the grade will be below the average of the grade as found in the common grade storage bins of a public terminal elevator. For this reason it was feared that the establishment of a sample market at Winnipeg would lead to a deterioration in the quality of Canadian wheat exported under the Canadian official certificate of grade. It was prophesied that this would ultimately injure the reputation of Canadian wheat and the price it would command on foreign markets. The Grain Inquiry Commission of 1906 based its objection to a sample market on the ground that it would entail mixing.

The act of 1912 authorized the establishment of sample markets, and provided that the mixing of grain should be permitted in connection therewith under such regulations as were recommended by the Board of Grain Commissioners and approved by the Governor in Council. This part of the act, however, did not come into effect until 1917, when the government was satisfied that the proper conditions existed for bringing it into force. The Board of Grain Commissioners then drew up rules for the regulation of private terminals where mixing could take place. The rules were approved by the Governor in Council. Although steps had been taken by the Winnipeg Grain Exchange to provide for sample trading a sample market was not in fact established. Between 1917 and 1920 the Winnipeg market was closed and wheat came under government war legislation. But meanwhile under the rules established by the Board of Grain

Commissioners, and confirmed by order in council of the federal government, the elevators that had hitherto been operated under hospital elevator licenses were now licensed and operated as private elevators.

The rules promulgated for their control provided that all grain received into private elevators should be officially inspected and weighed in and out. The advantages derived under the new rules by the elevators that had hitherto operated as hospital elevators were quite important. Hospital elevators could not take in wheat of a better grade than No. 3 Northern. They were not permitted to do a public storage business. All grain received into hospital elevators must be the property of the hospital elevator owners and no provision was made for issuing warehouse receipts. Under the rules governing private elevators they were indirectly admitted to the privilege of handling grain that they did not own. It was provided that the owners of grain might "enter into a contract for the handling and mixing of grain in such private elevators." By an amendment to the rules in 1920 the word "storing" was added. In 1923 an addition to the rules provided that farmers' cars could be unloaded into private elevators, if their consent in writing was obtained. The rules established in 1917 also provided for the issuance of warehouse receipts for grain in store in private elevators. These receipts were registered with the Board with respect to quantities, and an amendment to the Canada Grain Act in 1919 provided that the holders of such receipts should have "good title to the grain therein described as fully and effectually as if such warehouse receipts had been issued by a terminal elevator under the provisions of this act."

Under these rules and regulations the private elevators

were gradually securing a position that enabled them to encroach successfully upon the business of the public terminals. This was clear by 1920, when three large public terminal elevators withdrew from that field and took out licenses as private elevators. It is instructive to observe that just as the problem of handling tough and off grade grain led to the recognition of mixing in connection with hospital elevators, the agitation and demand for sample markets was partly responsible for the establishment of private mixing elevators at the head of the lakes.

The growing power of the private elevators was recognized when the Winnipeg Grain Exchange passed a by-law in 1920 to "regularize" these houses. Dealers in futures upon that market agree upon certain elevators whose warehouse receipts are acceptable in fulfillment of the contract. These elevators are all located on the waterfront at the head of the lakes and are called "regular" houses. When in 1920 the three public terminal elevators became private houses, they desired still to be deemed "regular" by the Winnipeg Grain Exchange. They wished their warehouse receipts to be acceptable in fulfillment of future contracts. The exchange provided that private houses located on the waterfront with sufficient railway facilities, which were prepared to give a bond to the exchange, might have their warehouse receipt guaranteed with respect to grade by the exchange and be listed as "regular." Thus, with the exception that these private elevators were bonded partly by the Board of Grain Commissioners and partly by the Winnipeg Grain Exchange, and that their warehouse receipts were guaranteed with respect to grade by the exchange instead of by the Board, "regular" private elevators were essentially in the same general position as the public terminal houses. But whereas

the owners of public terminal houses could not trade in grain, could not mix grades, and were subject to an annual audit, the private houses were free of all these conditions.

The Royal Grain Inquiry Commission of 1923-24 made a careful investigation of the operations of the private terminal elevators, and recommended that they should be limited to handling their own grain. This recommendation was not accepted by parliament which continued until 1930 to grant them the privilege of accepting grain not their own for storage, on obtaining the consent of the shipper. With a view to protecting the quality of the grades, the 1925 act provided that all grain inspected out of a private terminal in order to receive a grade should be equal in quality to a similar grade passing inspection from the general bins of a public terminal elevator. Power was also given to the Board of Grain Commissioners to demand, with the approval of the Governor in Council, that grain shipped from a private elevator should have the official certificate of grade endorsed, "from a private elevator." Under these conditions private mixing houses became a definite part of the public grain handling system of Canada. The latest stage has been the evolution of the large private terminal elevator into the semi-public provided for by the Act of 1930, this change being accompanied, as we have seen, by the prohibition of mixing in the four highest grades of red spring wheat.

VI. THE "MIXING" PROBLEM.

The preceding pages have detailed the steps by which the public terminal elevator system has been replaced by a system recognizing mixing within limits as in the public interest. The problem of mixing has created a great deal of discussion in western Canada, and it seems worth while to set forth the main points that have to be considered in connec-

tion with the practice. It must be noted that legal recognition of mixing represents a triumph of private enterprise over a perfectly definite and straightforward public policy—a public policy that may not have been in the best interests of Canada, but was certainly believed to be so at the time of its inauguration.

At first private elevators were operated by grain merchants whose main business was to buy and to sell grain. They owned and operated relatively small elevators purely with this end in view. They aimed to buy grain as cheaply as possible, put it into as good a condition as possible for the market, and sell it at as high a price as they could secure. They were not primarily interested in warehousing grain as a public utility under a regulated scale of charges, but in merchandising. Mixing afforded an opportunity of profit under the system of selling by official inspection grades, by enabling a certain amount of low grade relatively cheap grain after it was carefully cleaned or improved by treatment, to be added to grades of higher quality. If the grain of the upper grade chosen for the mix was the top of the grade, after it was diluted it could still compare favourably with the average of the grade passing out of the public terminal elevators. At least on official inspection it would "get by." In this operation lay the main inducement and the chief source of profit in mixing.

Since many of the private elevators were connected by common stock ownership or by other ways with lines of country elevators, and frequently with public terminal elevators as well, the cars consigned to the private elevator from country points could be selected with a view to mixing. Cars containing grain at the minimum of the grade or near it, would be shipped to the public terminal elevator; cars containing flush grades could be diverted to the private elevators

because they would stand dilution. Further, grain that came to the elevators in moist condition could be dried, and could then be used for mixing with the straight grades. Off grades, after treatment, might be raised by judicious mixing with grain of better quality. The possibility of profits from these practices was the chief reason for the long and determined efforts of the private elevators to trade under the prestige acquired by grain sold under the straight grade certificates given by the Canadian federal inspection service.

The public terminal operators must necessarily find their profits from handling charges plus what might be derived from sale of screenings and overages. But the private operators could perform all the services required in the terminal handling of grain. They could receive, weigh, clean, store, dry and ship exactly like public terminal houses. Further, the greater freedom in binning gave the private terminal managers a technical advantage in operation. If they were expert mixers, then their revenue would include profits for mixing as well as that from merely handling and cleaning, the main source of revenue for the public warehouseman.

These incentives account for the development of mixing houses. In brief, mixing houses promised a more lucrative return to private enterprise than public warehousing. But there must be added another factor which undoubtedly stimulated the trend away from the public elevator system. This was the intrusion into the Canadian grain trade of large amounts of American capital. There is evidence to show that in specific instances efforts were made by Canadian interests to attract American capital into this field. American capital, as a result, came to control lines of country elevators in the western grain belt and private elevators at the head of navigation. The American operators were accustomed to mixing grain in the United States, and they

carried the methods with which they were familiar as far as they were able into the Canadian trade. Naturally, this foreign capital represented a pecuniary interest alone; the general reputation and prestige of Canadian grain upon the markets of the world did not necessarily enter into consideration.

With the growth of handlings out of private terminals there developed the view that what the foreign grain buyer based his offer upon, and expected to receive, was the legal minimum of the grade. Hence, if he got a better grade than the legal minimum, that is, if he got the average of the grade, he was receiving something over and above what he had bargained for and paid for. It was claimed that foreign buyers were never known to offer a premium for a flush grade; they purchased on the basis of the official grade as it was defined in the statute, and expected to receive that quality. In this theory there appeared something of the same psychology that accounted for the agitation in favour of sample markets. The farmer objected to selling a carload of wheat of flush grade at the current price for the grade. He believed that he should receive something more, and that if a sample market were in existence he would be able to sell his choice cars at a price that represented a premium over that quoted for the grade. The grain operator selling to the miller or for export adopted the same line of argument, and held that the buyer was only entitled to the minimum of the grade; if he wanted something better let him increase his demand price offer. While the psychology in both instances is the same, the private terminal grain operator has managed within limits to secure the privilege of mixing and being given straight grade certificates, but the farmer has not developed a sample market.

There is evidence to indicate, however, that with a system

of unrestricted mixing at the terminals there is keener competition between country elevator agents for cars of high quality grain. There is also less reluctance to handling small lots of off-grade quality. Unrestricted mixing, if allowed at the terminals, probably would lead to a larger group of independent commission merchants, and would also favour the development of sample markets.

Although when mixing in all grades of wheat was permitted there were some isolated complaints from British buyers that Canadian wheat was not of as high a quality as it had been formerly, there was really no conclusive evidence that these complaints were due to the practice of mixing. A drop in the protein content of Canadian wheat for certain years, due to climatic conditions during growth, was sufficient to account for these complaints. In recent years the protein content of Canadian wheat has been very high and complaints upon the quality have practically disappeared. The private terminal operators maintained that wheat shipped from their terminals compared most favourably with that delivered from public terminal elevators, which represented the average of the grade.

When grain is received into a private terminal elevator it is common practice to clean it carefully even although there may be no percentage of dockage set against it by the inspector. Indeed, as a rule the grain is cleaned "heavy", that is, a larger amount of material is removed from it than whatever dockage may have been determined as necessary for cleaning by the inspection department. As a result a certain amount of thin, shrunken or immature wheat is removed. By this operation the grain is made of as high quality as its nature will permit. In the same way, grain that is tough or damp is dried, although frequently tough grain may be directly mixed with dry grain and in this way

the average of moisture in it be reduced. Smutted grain is cleaned and washed. The critical operation, of course, is mixing grades of different quality with a view to "promoting" grain of a lower quality into a higher grade. There does not appear to be any fixed rule for doing this. It is a matter of judgment how much dilution a flush grade will stand without being officially reduced a grade when inspected out of the terminal. In connection with their mixing operations, some of the private terminals employ men who have been trained in the official inspection department of the Dominion Government.

One illustration, however, will throw some light upon the degree of mixing that was taking place before legislation prohibited it in the four highest grades of red spring wheat. This example is taken from returns submitted to the Inquiry held in 1924. Two returns were presented. The first shows the wheat classified according to grades; the second shows what proportion of each grade was a straight grade and what proportion represented off grades.

Wheat	Receipts Bushels	% of Total	Shipments Bushels	% of Total
1 Hard _____	38,691—40	0.4	_____	_____
1 Northern Grades _____	7,590,777—00	72.5	9,242,326—10	87.9
2 Northern Grades _____	2,026,377—50	19.3	1,230,695—10	11.8
3 Northern Grades _____	744,367—10	7.1	35,931—40	0.3
No. 4 _____	33,831—20	0.3	_____	_____
No. 5 _____	1,084—50	_____	_____	_____
Smutty Grades _____	13,054—50	_____	_____	_____
Heated and Fireburnt 1 Northern _____	4,205—40	.4	1,557—50	_____

Wheat	Receipts Bushels	% of Total	Shipments Bushels	% of Total
Heated 2 Nor. Grades	1,106—00	-----	-----	-----
Spring and Durum	23,901—20	-----	-----	-----
Total	10,477,397—40	100.0	10,510,510—50	100.0
Stocks in Store Aug. 31, 1922			-----	
Stocks in Store Aug. 31, 1923			7,127—50	
Grand Total	10,477,397—40		10,517,638—40	

It will be observed that even assuming that the grades were all straight grades there would be evidence that a considerable amount of No. 2 Northern and of No. 3 Northern wheat had been pushed up into the No. 1 Northern grade. The second return makes clear that a not inappreciable amount of each grade of wheat shipped out was obtained by treating and blending wheat that was of the requisite quality, but because of excess moisture or some injury, could not be classed in the straight grade.

Wheat	Receipts Bushels	% of Total	Shipments Bushels	% of Total
1 Hard	38,691—40	0.37		
1 Northern Grades—				
Straight 1				
Northern	7,368,668—00	70.33	9,241,349—10	87.9
Rejected 1				
Northern	70,534—00	0.67	977—00	
Tough 1				
Northern	144,552—40	1.38		
Tough Rej. 1				
Northern	7,022—20	0.07		

TERMINAL ELEVATORS

175

Wheat	Receipts Bushels	% of Total	Shipments Bushels	% of Total
2 Northern Grades—				
Straight 2				
Northern	1,892,595—40	18.07	1,230,695—10	11.8
Rejected 2				
Northern	31,069—20	0.30		
Tough 2				
Northern	98,324—10	0.94		
Tough Rej. 2				
Northern	4,388—40	0.04		
3 Northern Grades—				
Straight 3				
Northern	684,906—30	6.54	35,931—40	0.3
Rejected 3				
Northern	16,019—20	0.15		
Tough 3				
Northern	40,971—50	0.39		
Tough Rej. 3				
Northern	2,469—30	0.02		
No. 4 Grades—				
Straight				
No. 4	28,668—00	0.28		
Rejected				
No. 4	1,331—00	0.01		
Tough				
No. 4	3,832—20	0.04		
Total	10,434,045—00	99.6	10,508,953—00	100.0
Other Grades	43,352—40	0.4	1,557—50	
Grand				
Total	10,477,397—40	100.0	10,510,510—50	100.0

The elevator received 7,368,668 bushels of straight grade No. 1 Northern wheat and it shipped out 9,241,349 bushels of the same grade. Broadly speaking, the general result of

mixing in this elevator was that the low grades and the tough and damp wheat were made capable of grading under official inspection as No. 1 and No. 2 Northern wheat. It is difficult to escape the conclusion that diluting the highest grades of red spring wheat with wheat of a lower grade to such a degree effects some reduction in the quality of the higher grade. On the other hand, mixing into the dry straight grade a certain amount of the tough wheat of the same grade is a natural method of conditioning the latter. There is also scientific evidence to show that when artificially dried with proper care, the baking qualities of moist wheat remain uninjured.

The mixed product compares quite favourably in appearance with the average of the grades in the public terminal elevators, but there must remain a feeling that its milling quality is inferior. Experts before the Royal Grain Inquiry Commission in 1924 compared samples of mixed grain with the straight grade of wheat, and agreed that for milling purposes they would prefer the latter. Except for a slight lack of brightness in colour there was little to choose between them. It is known that the large Canadian flour mills with their own lines of country elevators grind almost exclusively the highest grades of wheat. Holding to the view that the quality of Canadian wheat placed upon the export markets of the world should be the very highest possible, parliament passed the amendment to the Grain Act in 1929 prohibiting mixing in the four highest grades of red spring wheat.

But at the same time it was recognized that the ability to mix grain in terminal elevators undoubtedly provides a better method of handling the off grades and small lots of grain of distinctive characteristics than is possible under the public terminal elevator system. It was an appreciation of this fact that had led to the establishment of mixing

houses in the first instance. Every year a varying percentage of grain comes to the terminals in poor condition to be sold on the export market. By heavy cleaning, drying and conditioning this grain, the private and semi-public terminals perform a distinct service to the grain grower. In a year when the general quality of the western grain crop is low, the effect of the private terminals is to put this low grade grain in the best possible shape for marketing. A second advantage, that is frequently lost to view, is that these terminals reduce the number of grades that are offered for shipment, and therefore the number of grades that must be kept separate in bulk carriers. By materially facilitating the movement of grain from the lakehead to its final destination, it cheapens the service and increases the efficiency of the carriers. There seems to be no doubt that it also adds to the efficiency of a terminal elevator, if it is operating as a semi-public terminal, by adding to its capacity, since small lots of low grade grain need not be kept separate. These advantages are shared by the grower, since a better market is provided for the low and off grades and the foreign buyer does not find it so easy to pick up bargain lots in the Canadian market.

VII. GOVERNMENT SUPERVISION OF TERMINAL ELEVATORS.

Terminals are under close and continuous supervision by the Board of Grain Commissioners. An Assistant Commissioner is stationed at the head of the lakes for this purpose. It is required that before any new terminal elevator is constructed or any existing terminal elevator is altered, plans and specifications of the construction must be submitted to and approved of by the Board. Before a new terminal elevator is licensed and bonded, the scales are tested officially and the Chief Weighmaster of the Board must make certain that no grain can be diverted between the point of reception

and the weigh scales; similarly, that no grain can be diverted after it had been weighed for outward shipment. Terminal elevators are licensed and bonded by the Board according to capacity and the nature of the license desired. All grain is officially weighed and inspected into terminal elevators, and officially weighed and inspected out. Elaborate regulations detail the procedure to be followed when grain in a terminal elevator threatens to go out of condition.

In the case of red spring wheat, it is also required that when delivered out of a terminal elevator for carriage to any other terminal elevator or for export, the grade must conform to the standard export sample. This sample is constituted by mixing three parts of wheat of the general average assigned to such grade at the inspection points through which the grain delivered has passed, with one part of wheat equal to the quality of the standard sample of such grade. This regulation acts as an additional safeguard against the mixing down of grades of wheat to the minimum or nearly the minimum of the grade.

The manager of every licensed public and semi-public terminal elevator must keep the grain fully insured by companies approved by the Board of Grain Commissioners against loss or damage by fire. In the event of loss by fire, holders of warehouse receipts have first claim upon the insurance moneys available. The Board requires that the insurance be taken out in trust in the name of the manager, who distributes the moneys to the holders of the receipts as their interest may appear at the time of the loss.

Warehouse receipts issued by the manager for grain placed in a public or semi-public terminal elevator must be numbered consecutively, and be registered by the Registrar of the Board of Grain Commissioners. Upon the delivery of the grain from store when the receipt is surrendered, it must

forthwith be sent to the Registrar for cancellation. In connection with the mixing privilege, it is provided that terminal elevator receipts may be issued by the manager of a terminal elevator to himself in respect of grain owned by him, and after mixing has taken place these receipts may be cancelled and new receipts issued.

At the end of the year an annual audit or weigh-up of all grain in public and semi-public terminal elevators, and of the four non-mixing grades in private terminal elevators, is conducted by the Board of Grain Commissioners for its information and guidance. The expropriation of any overage, beyond the margin of one-quarter of one per cent. allowed on handlings where mixing is prohibited, removed the incentive to mix, and thus makes effective these provisions of the Act. It has never been found possible to devise a workable method of bin records, or supervision of the binning of grain in the elevators by officials that would achieve this end, except at enormous expense.

The proper officer must furnish, as required by the Board of Grain Commissioners, reports as to the condition and management of the elevator. Apart from special reports of this nature, weekly statements to the statistician of the Board of the quantity of each kind and grade of grain in each terminal warehouse and the total amount of fire insurance thereon must be made. These reports are checked by the statistician against the daily reports which are furnished to him by the weighing and inspection departments. In brief, the object of the Act is to provide that the warehousing of grain in public terminal elevators shall be carried on under the deliberate and continuous surveillance of officers of the Board of Grain Commissioners. These provisions are the results of experience in the operations of terminal elevators for almost half a century.

VIII. CLEANING GRAIN AT THE TERMINALS.

It is the Canadian policy to market grain in as clean a condition as possible. Consequently, an important function of the terminal elevators is to clean grain. The Act states that in the case of unclean grain, inspected in the Western Inspection Division, the inspector must state on his certificate the percentage of dirt and domestic grain to be removed in order to clean the grain to the grade certified. It is further enacted that every terminal warehouseman in the Western Division must clean all grain received by him on which the inspector has set dockage. The Board directs, however, that this provision shall not apply to such instances as where wheat is rejected on account of mixtures capable of being separated. In this case the wheat will be cleaned only at the request of the person interested therein. It is the intention of the Act that all grain shipped out of a terminal elevator and finally inspected shall leave the west commercially clean. That is, in practice it shall not contain in any instance more than three-quarters of one per cent of foreign material.

During the course of a season at the head of the lakes, over 100,000 tons of dockage is removed at the terminal elevators from grain shipped to that point. Some of this material has value commercially, and in its raw state is known as "elevator screenings." As it comes from the separators it contains weed seeds, broken kernels, wild oats and foreign matter of various kinds. These elevator screenings are re-cleaned and are graded into three classes: (1) mixed feed oats made up largely of black wild oats; (2) standard re-cleaned screenings, chiefly wild buckwheat and broken wheat kernels, and (3) refuse screenings composed of black seeds, noxious and otherwise and other foreign material. Mixed feed oats and re-cleaned screenings together constitute from 25 per cent to 45 per cent of the total run of elevator screenings. These two classes are considered excellent stock

food, and command a money value for that purpose. Refuse screenings are unsuitable for feeding stock, and their disposal is quite a problem at the head of the lakes. Experiments have shown that they might be used as fuel in furnaces of suitable construction. At the present time they accumulate in great quantities and are expensive to remove. The present method of getting rid of them is to dump them into the lake.

IX. TERMINAL ELEVATOR CHARGES.

The maximum tariff of charges for terminal elevators is reviewed annually at a public hearing held by the Board of Grain Commissioners each year before the terminal elevator companies apply for their annual licenses. After consideration, the maximum tariff is approved for the year. When licenses are applied for, the managers of terminal elevators may file tariffs of charges below the maximum approved by the Board, but under a section of the Grain Act there can be no change during the year in the tariff of charges filed and approved for a terminal elevator. This provision protects the owners of grain in terminal storage from having the rate increased at a season when it is difficult to move it.

The maximum tariff of charges provides for receiving, elevating, shipping, and storage, and insurance against fire for a period of fifteen days. The rate on straight grade, tough, damp or wet grain is: flax, two cents per bushel; rye, one and one-half cents per bushel; wheat, oats and barley, one and one-quarter cents per bushel. Tough, damp, wet, condemned, heating, heated or fireburnt grain may be refused, and if accepted will be only at the owner's risk of deterioration. Damp grain and tough and damp flax is dried without notice as soon after unloading as facilities will permit. The drying charges on tough grain is three cents per bushel, on damp or wet grain, five cents per bushel. If grain be stored

beyond the 15 day limit,"there is a charge of one-thirtieth of one cent per day per bushel on straight grades and tough grain. This includes insurance. On mixed grain handled as mixtures, the rate is two-thirtieth of a cent per hundred pounds per day. On screenings, it is one-tenth of a cent per hundred pounds per day.

The tariff of charges for cleaning grain provides that if the amount of dockage set on wheat be under three per cent, there will be no charge for the service. The material screened out of the wheat is retained by the elevator as remuneration for the service of cleaning. If the amount of dockage is between three and five per cent inclusive, the charge for cleaning is one-half cent per bushel. Wheat with a dockage of over 10 per cent is cleaned at the rate of $1\frac{1}{2}$ cents per bushel. Where a charge is imposed on the shipper, there is also a return made for the dockage. On wheat carrying a dockage of three per cent or over, after deducting one-half of one per cent of the gross weight of the car for waste, a return is made to the shipper for the balance of the screenings. This return is made in the form of a warehouse receipt, and may be sold. Similar provisions cover the cleaning of coarse grains, but there is no charge for cleaning oats, barley, rye or flax unless the dockage set is five per cent or over. On wheat carrying a return of other grain of commercial value, an additional separation charge is authorized.

On all cars of grain received into public and semi-public terminal elevators, there is an allowance for invisible loss and shrinkage. This allowance amounts to 30 pounds per car for wheat, 50 pounds per car for oats, barley and mixed grain, and 56 pounds for rye and flax.

CHAPTER VIII

INSPECTION AND WEIGHING

THE Canadian method of marketing grain represents a very full application of the principle of selling on the basis of official standards. The grain is bought, sold and delivered on the basis of official grades and weights. The warehouse receipt transfers a quantity of grain of a given kind and grade. The official Canadian certificates of grade and weight are held to be conclusive evidence that the quality and quantity contracted for have been delivered. This system has in many respects been copied from that in use in the United States, where bulk handling developed earlier than in Canada, but the relatively much greater importance of the export trade to Canada has given it a predominance over sample trading that does not exist in the United States.

There are many factors which may affect the value of grain either for milling or feeding purposes, and if these factors are clearly recognized by experts and brought under orderly classification, the business of handling and trading in grain is greatly facilitated. Handling grain under definite grades makes possible the storage of grain of the same grade owned by different parties in common bins. It thus leads to great economy of storage space, particularly at the terminals, and thereby reduces overhead costs. Moreover it makes possible the application of clearing house methods in loading vessels. Steamers can secure a full cargo of grain from a single terminal elevator, though the parcels of grain tendered for shipment by the owners may be stored at different eleva-

tors on the waterfront. An exchange of documents accomplishes this result. Finally, grading eliminates the necessity of an examination of the grain by the prospective buyer, or if he does buy without examination, being forced to rely upon the good faith of the vendor. Between the buyer and seller of Canadian grain is set an impartial independent tribunal, certifying to the quality of the grain.

The Canadian system classifies grain on the basis of variety, soundness, cleanliness and the amount of moisture present. The administration of the service is under the Board of Grain Commissioners. For convenience, and to allow for marked differences in the grain produced, Canada is divided into two divisions. The Eastern Inspection Division consists of the Maritime provinces, Quebec, and that portion of Ontario lying east of the city of Port Arthur. The Western Inspection Division includes the city of Port Arthur, Ontario west of that point, Manitoba, Saskatchewan, Alberta and British Columbia. The Chief Grain Inspector for Canada has his office in Winnipeg, since it is in the western division that the service finds its chief employment. The system may be considered under six heads. These are, (1) the classification of grades; (2) the Committees on Grain Standards; (3) Sampling and Inspection; (4) re-inspections, surveys and appeals; (5) official weighing; (6) the tariff of charges. In addition, there are some problems connected with inspection that are worthy of discussion.

I. GRADES OF GRAIN.

Grain as dealt with by the Inspection Department falls into three general classes, known as the "statutory grades," the "commercial grades" and the "off grades." Statutory grades are defined by the Grain Act. They include the wheats of the higher grades, oats, barley, rye, flaxseed and

buckwheat in the western division. The classification for the eastern division adds corn and peas, but omits flaxseed from the list. Since the statutory definition of a grade can only be altered by parliament, the requirement of these grades do not vary with each crop, and are only changed after careful investigation of the underlying conditions of grain production. The grain of one year may differ so much, however, from that of another year, on account of climatic or other conditions, that it cannot be included in the grades established by parliament. To give flexibility to the system and to provide for this contingency, certain grades each year may be defined by the Grain Standards Committee. These grades are known as the commercial grades. The off grades include all grain that for various reasons cannot be classed within the statutory or commercial grades. Grain in the off grades falls into several distinct groups. Grain of excellent quality otherwise may suffer from excessive moisture content and thereby be rendered unfit for warehousing. When the inspector meets with such grain, he marks it "tough" or "damp" of the grade to which otherwise it would belong. The percentage of moisture allowed in straight, tough or damp grain is as follows:

	Straight Grade	Tough	Damp
Wheat _____	Up to 14.5%	Over 14.5% to 17%	Over 17%
Durum Wheat _____	Up to 14.8%	Over 14.8% to 17%	Over 17%
Oats _____	Up to 14.0%	Over 14.0% to 17%	Over 17%
Barley _____	Up to 14.8%	Over 14.8% to 17%	Over 17%
Rye _____	Up to 14.0%	Over 14.0% to 17%	Over 17%
Flax _____	Up to 10.5%	Over 10.5% to 13.5%	Over 13.5%
Buckwheat _____	Up to 14.8%	Over 14.8% to 17%	Over 17%
Corn _____	Up to 15.5%	Over 15.5% to 17%	Over 17%

All wheat that is excluded from the recognized grades because of mixtures of cereal grains (barley, rye, etc.), or

foreign matter that cannot be readily removed, such as the seeds of ragweed and cockle, up to 10% of such mixtures, is classed as "Rejected" to the grade to which it belongs. Wheat that is unsound, musty, sprouted, heated, fireburnt, or mixed with cinders or gravel, or has commercially objectionable foreign odour, is also graded "Rejected", with a notation on the certificate as to cause and condition. The coarse grains are graded as "Rejected" when heated in excess or fireburnt, or containing mixtures, or having objectionable odours. An example of the type of grade placed on such grain is "Barley, rejected, mixed, fireburnt." When, however, grain contains over 10% of heated, or over 8% of fireburnt kernels, it is classed as "Sample" wheat of the variety, with notations to show cause and condition.

Smutted or dried grain is classed accordingly, as is scoured or washed wheat. Dried grain and scoured or washed wheat, if according to the inspector's judgment it complies with the established standard sample for such grade, may be graded as a straight grade, but no grain which has been treated with lime or sulphur can be graded higher than No. 4.

This system of classification provides for a large variety of grades, which report as accurately as possible the quality and condition of the grain. This may be illustrated by the number of grades for wheat in the Western Inspection Division. The Grain Act defines five grades of red spring wheat, No. 1 Manitoba Hard Wheat and Nos. 1, 2, 3 and 4 Manitoba Northern Wheat. The Western Grain Standards Committee annually defines grades of No. 5 and 6 red spring wheat, and for 1930-31, in view of a considerable quantity of rusted wheat, also established "Special" grades of No. 4, 5 and 6 spring wheat. The statute also defines grades for amber and red durum wheat. Since wheat may fall under

the general categories established among the off grades, with distinctions between wheat rejected on account of admixtures of other grain, or on account of heating, the records for a crop year will show a great number of grades of western spring wheat alone. In addition, the Act provides in the Western Inspection Division for red and white winter wheat. These varieties may also come under the classification for off grades. As a result the total number of grades of wheat for western Canada actually used in the crop year of 1930-31 exceeded 100 grades. The Act of 1930, by providing for grades of mixed wheat and of mixed grains appreciably reduced the number of grades with which the terminal elevators had to contend.

The Canada Grain Act also provided for the inspection, if desired, of grain grown outside of Canada, either upon its entry into the country or on its passage through for export. When an inspection certificate is issued for grain grown outside of Canada, it states the country of origin, and that the grade to which such grain has been assigned is a grade established by the Eastern Grain Standards Committee.

The highest grade of red spring wheat defined by the Act is No. 1 Manitoba Hard Wheat. This grade includes Marquis wheat and all varieties of hard red wheat considered equal in value to Marquis. The wheat must be sound, well-matured, free from wheat of other classes, must weigh not less than 62 pounds to the measured bushel, and must contain at least 80 per cent of hard vitreous kernels. Originally 75 per cent of this wheat was required to be of Red Fife, but with the advent of Marquis the definition was widened to include this variety. Marquis has gradually replaced Red Fife, and the Act of 1930 makes Marquis the test of quality. In 1925 the weight requirement of the measured bushel for this grade was increased from 60 pounds to 62 pounds. The

amount of wheat harvested each year that comes up to the qualifications imposed for No. 1 Hard, varies greatly with the nature of the season. For the seven years ending July 31 of 1927, approximately 4,500,000 bushels were graded as No. 1 Hard, and of this quantity the crop of the year of 1921 accounted for 2,803,725 bushels. For the crop of 1928 only one carload was marketed. The 1929 crop yielded 5,203,360 bushels, and shipment of this grade between August 1 of 1930 and January 31 of 1931 amounted to 15,459,019 bushels. These figures disprove the assertion sometimes made that Western Canada is no longer capable of producing No. 1-Manitoba Hard Wheat.

The Number 1, Number 2 and Number 3 Manitoba Northern grades of red spring wheat are the main staples of commerce. The definition of No. 1 Northern states that it must be Marquis wheat or varieties of red spring wheat equal to Marquis, must be well matured, must weigh not less than 60 pounds to the bushel, be practically free from damaged kernels and foreign grains and must contain at least 65 per cent of hard vitreous kernels. By the Canada Grain Act of 1912, the weight of this grade per measured bushel was placed at 58 pounds, but this was later increased to 60 pounds. No. 2 Northern must be composed of red spring wheat of good milling quality, must weigh 58 pounds to the measured bushel, and must have 50 per cent of hard vitreous kernels.

For many years No. 3 Northern was known as the "inspector's grade", since the specifications of the Act of 1912 provided that any wheat not good enough to be graded as No. 2 Northern, might be graded as No. 3 Northern at the discretion of the inspector. In order that there might be uniformity in the work of the deputy inspectors, this provision meant that the specifications for No. 3 Northern were

defined by the Chief Inspector of Grain for Canada. In practice, this came to mean that wheat of high quality, excluded from the preceding grades because of damage from frost or weather, found a place in No. 3 Northern. The grade, according to the conditions of the year, would be composed largely of grain slightly frosted or slightly bleached, or grain with a slight percentage of sprouted kernels. Until 1923 it was customary to allow sound but thin wheat weighing 56 pounds to the bushel to be graded as No. 3 Northern. In that year, in answer to complaints from the United Kingdom, the weight requirement was increased by the Chief Inspector to 57 pounds. By the Grain Act of 1925, the requirements of the grade were no longer allowed to remain discretionary but were made definite. The present Act specifies that No. 3 Northern shall consist of red spring wheat of fair milling quality, be reasonably well matured and reasonably free from damaged kernels. The minimum weight per measured bushel is 57 pounds. No. 3 Northern permits an admixture of other classes of wheat up to 10 per cent, but not more than four per cent of this may be durum wheat.

The Act of 1930 established No. 4 Northern as a statutory grade, and included thereunder two types of wheat as being substantially equal in value. The first type consists of red spring wheat reasonably well matured but excluded from preceding grades on account of frosted or otherwise damaged kernels with minimum weight per measured bushel of 57 pounds; the second type is for wheat rusted or shrunken, but otherwise reasonably sound, with a minimum weight of 55 pounds per measured bushel.

In the Winnipeg market the above five grades are called the "contract grades", since any of these grades may be delivered at a fixed spread in price between the grades in

fulfilment of a futures contract. The basic price rests upon the price of No. 1 Northern.

The commercial grades of red spring wheat are classified principally on the amount of damage from adverse weather conditions. Thus in a given year there may be a considerable volume of wheat with 50 per cent or more of frosted kernels, or uneven ripening may cause the presence of green kernels. The commercial grades are devised to meet conditions of this kind, and enable the farmer to sell his grain and have it handled on a grade basis even if it does not meet the requirements of the statutory grades. Naturally, the regulations for the commercial grades vary somewhat from year to year according to the peculiarities of the crop.

The revision of the Grain Act passed in 1930 extended the number of statutory grades, and generally tightened up the specifications. The classification was prepared with great care. The initial draft of the schedule was made by a committee of technical experts headed by the Chief Grain Inspector for Canada. Their work was later reviewed by the Western Grain Standards Board. Further revision occurred in the Agricultural Committee of the House of Commons. The final result accordingly represents the work of the technical expert, the representative of the grain grower, and the legislator.

For many years an interesting controversy has ranged around the use of the word "Manitoba" as part of the official designation of Canadian western red spring wheat. The appellation was used properly enough when the bulk of wheat grown in western Canada and exported abroad was produced in the province of Manitoba. But this condition has not existed for many years. When Saskatchewan and Alberta became heavy producers of wheat, the question was raised that a name more broadly descriptive of the

wheat growing region should be adopted. It was suggested that the name "Canada Northern", or "Canada Western", should be substituted in place of Manitoba Northern. Durum wheat, oats, barley, rye and buckwheat are designated as Canada Western grain. Flax seed of the highest quality is called No. 1 Canada Western flax seed, and the other grades, Canada Western flax seed. There is thus ample precedent for using the terms Canada Western or Canada Northern in application to hard spring wheat.

But an investigation has always elicited the fact that the trade is opposed to any change. "Manitobas" has become a trade name abroad for Canadian wheat grown in the west. It is under this name that western Canadian wheat achieved its high reputation. To change the designation would undoubtedly create doubt and confusion for some time at least, and would injure a reputation built up over nearly fifty years. An instance of how easily misconceptions may arise is reported in connection with certain early shipments out of the port of Vancouver. When shipments were first made from that port, certain foreign importers offered much lower prices for wheat moving by the Pacific, than for wheat moving through eastern channels. Investigation disclosed that these foreign buyers were under the impression that they were being offered soft wheats grown on the Pacific slope, and not Canadian spring wheat of the hard red varieties. It is a fact that any change made in an old established trade name is likely to react unfavourably for some time upon the price offered for the commodity. The recognition of the possibility has caused the word "Manitoba" to be retained as the official name of western Canadian hard red spring wheats, although the great bulk of it is now grown in other western provinces.

II. THE GRAIN STANDARDS COMMITTEES.

A necessary part of the inspection system is the establishment each year of commercial grades to meet conditions peculiar to part of the crop. Hardly less necessary is the selection annually of standard samples which represent, so far as possible, the minimum of each of the statutory grades. It is the considered policy of Canada to maintain the milling value of each of the statutory grades with the least possible variation from year to year, so that the purchaser of a statutory grade may be reasonably certain that he will secure the same quality of grain as one crop succeeds another upon the market. An additional reason for preparing standard samples is that they are necessary to guide the officials of the inspection staff. These men work at different points and without the guidance afforded by actual samples of grain might interpret the definitions of the statutory grades differently.

For equally weighty reasons the export grades require to be translated out of the language of the statute into samples which can be examined and tested by the foreign buyer. Foreign importers have frequently requested that Canadian certificates be endorsed "Old Crop" or "New Crop" according to the circumstances, but this has never been authorized. Instead, the Canadian authorities take every precaution to ensure that while there may be slight differences in appearances from one year to another the grain of each grade shall represent substantially the same intrinsic value. There is loss rather than gain to be derived from delivering to a foreign importer a type and quality of grain that he did not expect to receive when he entered upon his purchase contract. In so far as he has any uncertainty about the quality of the grain offered, this uncertainty will

appear as a discount in the price he is prepared to pay. An eminent representative of the French milling trade, addressing a meeting of members of the Winnipeg Grain Exchange in the autumn of 1930, expressed the opinion that the regularity of the quality of Canadian wheat delivered in fulfilment of contracts made on the basis of "Canadian certificate final", was one of the strongest advantages Canada possessed in marketing her wheat in France.

The responsibility of establishing commercial grades and of selecting and settling upon the standard and the export samples for western grain, rests upon the Committee on Western Grain Standards. This body was originally known as the Western Grain Standards Board, but the name was changed in 1930 to prevent any confusion existing between it and the Board of Grain Commissioners. The Board of Grain Commissioners are required before the first of July in each year to constitute the Committee. The membership of the Committee is composed of the commissioners, the Chief Grain Inspector for Canada, the chairmen of the Grain Appeal Tribunals, the chief chemist on the staff of the Board, and the Dominion cerealist, all *ex officio*, together with a representative of the millers of wheat flour, four representatives of the grain growers in Alberta, five of the grain growers in Saskatchewan, three of the grain growers in Manitoba and one of the grain growers in British Columbia. It is important to note that the grain trade is not represented upon the Committee, but that the Committee essentially represents the grain producers of western Canada assisted by the best technical skill available.

In practice, as soon as the western crop begins to move, the Board arranges for the collection of samples from grain in course of shipment by the growers. With the co-operation of both railway companies, these samples are brought rapidly

from many points. For the first meeting of the Western Committee in the autumn of 1930, bushel lots of the grades of wheat available were obtained from 15 points in Manitoba, 50 points in Saskatchewan and 35 points in Alberta. Total samples obtained in this way amounted to 278 bags. At the later meeting of the Committee additional samples were secured from 39 points in Alberta and Saskatchewan. This supply was supplemented by 290 two-bushel bags of wheat, oats, barley and rye obtained at the head of the lakes. On the basis of such samples tentative standard samples are built up, and with red spring wheat the quality of the proposed standard sample is tested by milling and baking tests. The Standards Committee is usually convened about the fourth week of September, and its work occupies four or five days. Some years it is necessary to hold a second meeting later in the season, to deal with grades of grain, of which sufficient samples are not available earlier. Not infrequently the Committee requires new tentative samples to be prepared, and milling and baking tests are made of these before a final determination is agreed upon. It is a wise provision of the Act which places the chief responsibility for the commercial grades and standard and export samples upon a committee of growers. It relieves the trade from any suspicion that the samples may have been manipulated to the disadvantage of the producer. On the other hand, by making available the best technical skill for the use of the committee, safeguards are taken against erratic judgments. The trade quickly adjusts itself to the samples as they are finally established.

The Chief Inspector, at a nominal charge, must furnish a sample of any grade to any person who asks for it, and he must accompany the sample with a specific statement that it is the official standard sample, or the official export

sample, for the grade in question. By these regulations it is possible for importers in foreign countries, and the grain trade generally, to secure sets of samples each year for all the grades in which they are interested. A study of the official export sample for the grade will tell the foreign buyer the minimum quality that he may expect when he buys on the basis of a Canadian official certificate.

There are two Committees on Grain Standards in Canada. One functions in western Canada, and one in eastern Canada. The members of the Eastern Committee are subdivided in practice into the Toronto and Montreal sections. It is the Committee of Eastern Grain Standards that has occasion from time to time to select standard samples for grain grown outside of Canada. It has also established commercial grades for grain grown in the Eastern Inspection Division, and selects standard samples for the statutory grades where these are required. The Eastern Committee consists of two members of the Board of Grain Commissioners, one representative of the Toronto Board of Trade, one representative of the Montreal Board of Trade, one grain exporter, two millers of wheat flour in the Eastern Division, two representatives of the grain growers in Ontario, and such additional persons not exceeding three in number as the Board of Grain Commissioners may consider advisable. With the exception of grades selected for grain grown in the United States and exported via Canada, the work of the Eastern Committee on Grain Standards does not have any great significance to the export trade. Only a relatively small quantity of wheat grown in Ontario is now exported.

III. SAMPLING AND GRADING.

The grain inspection service consists of a staff of approximately 500 men, of which 143 are duly qualified inspecting

officers. Of the inspecting officers 7 are located in the Eastern, and 136 in the Western Inspection Division. Since the varieties of grain grown in the two parts of the country differ, the inspectors of each division are only qualified to grade grain grown in their own territory. All, however, are under the general supervision and control of the Chief Grain Inspector of Canada. In addition to inspecting officers, the work of the western division requires sampling crews, who take the samples of grain from the cars at specified points. A clerical staff is necessary to file samples, keep records, and generally to make the results of inspection available to the producer and to the trade.

The chief inspection centre in Canada is at Winnipeg, where samples are taken of all uninspected grain coming in from the west, unless the cars are loaded so full that proper samples cannot be obtained until they are unloaded. Other inspection points of importance are Calgary and Edmonton, where grain destined for ports on the Pacific coast is sampled and graded. The advantage of procuring the sample and making the inspection before the grain reaches its destination, is that it is possible to communicate the result of the inspection to the owner or his accredited agent before the grain is unloaded into the common bin, and its identity lost. If he is dissatisfied with the grade, he has an opportunity to ask for a re-inspection or make an appeal. A large staff of inspectors is also employed at the terminals. Grain that has not been inspected in transit is inspected when it is being unloaded at these points. Qualified inspecting officers in the same way grade all grain that is taken into the interior storage elevators located at Saskatoon, Moose Jaw, Calgary and Edmonton. Another group of inspectors is on duty at the terminal elevators to grade all grain shipped out of these houses.

The work of the grain inspectors is a very important link in the chain of services that must be performed in bringing Canadian grain to market. "They stand between two opposing interests, farmers and millers, the former complaining of undue severity and the latter of culpable leniency. Upon their flank is a third army of critics, the dealers, who consider the grading severe or lenient according as they themselves are sellers or buyers. They have to inspect an enormous volume of grain per car unit, and in certain seasons they must work rapidly and continuously during daylight. They must never be bewildered, either by the variety or continuity in which nature revels, or by the multiplicity of grades of which the terms are neither very distinct nor unambiguous. They have few mechanical aids. Their senses must always be keen, and their judgment always sound, for one error will be remembered against years of efficient service. Their work is of supreme importance for their verdict fixes which rate per bushel, out of several quoted on the market, the seller will receive, and the grain is stored, transported and sold both at home and abroad on their certificate."¹

The ordinary rank of an inspecting officer is that of deputy inspector. Men are chosen for this position upon the basis of a rigid examination. These examinations are held yearly and are conducted by a board of qualified examiners drawn from experienced grain men and appointed by the Board of Grain Commissioners. After passing the examination, the men are appointed upon the recommendation of the Chief Inspector for Canada. The candidates are chiefly men who have entered the service as samplers, trackmen or weighmen, and who secure promotion by qualifying as deputy inspectors. The higher rank of grain inspector is

¹Magill, *Grain Inspection in Canada*, p. 20.

ordinarily retained for men who are placed in administrative positions. Three inspectors of the very highest competence and experience are designated "appeal inspectors," and sit as chairmen of the Appeal Tribunals.

Every officer must subscribe to an oath of office that he will perform his duties to the best of his skill and understanding, and that he will not directly or indirectly deal or trade in grain, either on his own account or for other parties. The chief inspector and all other officers, before acting as such, must give security for the performance of the duties of their respective offices in such sums as the Board of Grain Commissioners directs. This security is available to the Crown and to any person aggrieved by any breach of the conditions thereof. The men who compose the inspection service are very carefully selected. From their ranks have come many men who now hold important executive positions as managers of terminal elevators, or elsewhere in the grain trade.

The actual routine followed in securing samples and making inspections may be described from the methods employed at Winnipeg. The work of the Inspection Department begins almost immediately after the grain from the west has been delivered into the railway yards. The conductor of the freight train hands over a copy of his weigh bill to the Inspection Department's train clerk, together with a form showing the composition of the train. The train clerk hands the latter to a member of the sampling crew. From the weigh bill he takes the information that is required by the Inspection Department: i.e., the car number, and initials, the shipping point, the kind of grain, the destination, the shipper's name and the party to whose order the car is shipped. He places the information on a train list which is delivered to the inspection department's yard office.

In the meantime the sampling crew has gone out to sample the train. A sampling crew consists of a foreman, two samplers and an opener and sealer. It is the latter who has received the form showing the composition of the train. It is his duty to open the car doors, and after the samples have been taken out to close them and to seal them. When he has arrived at the last car on the train he returns to his starting point. By that time the samples have been taken. He closes the doors and seals them, keeping a record of the numbers on the seals used. The seal records show that every car of grain in the train has been opened and sealed up again.

After the first car has been opened the sampler places his ladder against the grain door and with his probe and cloth climbs in over the top into the grain. His first duty is that of leveling off the grain on the inside of the grain door and he places his cloth on the level space. This cloth is five feet six inches long and 30 inches wide. He then takes up his probe, or tester. The probe is constructed of two brass tubes, one fitting snugly within the other. The outside tube at the bottom is finished with a cone-shaped point. Immediately at the top of the point is an opening through both tubes three-quarters of an inch in width and three and a quarter inches in length up the probe. Opposite the upper end the inner tube is closed with a metal disk. From the top of the first opening two and one-half inches up the tube another opening occurs, similarly closed up at each end. There are eleven such compartments in the probe. The total length of the tool, including the handle, is nearly six feet. This probe is plunged to the bottom of the car at seven designated points. The openings in the tubes are closed while the probe is being pushed down, and by a turn they are thrown open, and fill with grain when the bottom is reached. They are then closed, the probe is withdrawn and emptied upon the

cloth. By having separate compartments in the probe it is possible to detect any difference in the sample of grain secured at different depths of the load from the top downward. When grain of a lower quality is found in any part of the car beneath the surface the car is deemed to be plugged, and must be graded according to the lowest quality found therein.

As the foreman approaches the car where the sampler is working he makes out a ticket giving the number of the car and the date. He then mounts the ladder and watches the balance of the samples being procured. Where there are two men sampling, the foreman must see at least two of the probes being made out of the seven required. If he is satisfied that it is a uniform sample he mixes up the grain on the cloth and fills a small bag containing two and three-quarter pounds. Into that bag he places the ticket he has made out. Before placing it there, he draws a line about one inch from the bottom of the card indicating the load line of the car sampled, and adds the initials of the man who has made the probes. The foreman's own name is stamped on the back of it. The bag is then closed and taken out of the car and hung on a bolt head for collection.

After the samples have been collected and checked over, they are conveyed to the Inspection Department offices in the Winnipeg Grain Exchange Building, where the inspections will be made. The identification sheet that accompanies them does not show the ownership of the grain nor the district from which it has been shipped. Such information is sent direct to the Chief Inspector's office and is not available to the deputy inspector when he is forming his decision upon the basis of the sample before him. It seems necessary to emphasize this point, as districts frequently feel that for some unknown reason they are being discriminated against

when their grain does not grade up to expectations. Nothing could be further from the facts. The general principle is that where grain is on the border line between two grades, in cases of uncertainty, the grain is given the benefit of the doubt.

When the sample comes to the inspecting officer, a measured portion is first weighed in its rough state to provide information in case a shortage is claimed on the car, but if the factor of weight enters into the question of the grade, the sample is weighed again after the dockage is removed. The sample is then poured out on one of the inspection sheets, mixed up, and 500 grams are weighed on the scale used for dockage. This amount is then cleaned with a Cowan dockage cleaner used as a scalper to remove wild oats, chaff or straw. The grain is then passed through a regulation sieve, and if much buckwheat is present, through a special buckwheat sieve with diamond shaped perforations. The dockage is then determined. If the grain does not appear dry to the touch a portion of the sample is handed over to a special officer who tests for moisture by heating the grain in oil and measuring the moisture given off.

The actual grading of the grain is based on its appearance. The colour is an important factor in the determination of the grade. If the grain is dead in appearance and has lost its bloom, the indications are that it has suffered from climatic conditions. Bright, hard berries indicate quality. To ensure uniformity of conditions for judging, the inspecting officer, when viewing a sample, always exposes the grain in a north light. In difficult instances, the inspector may take part of the sample and count the individual grains in order to calculate the percentage of sound wheat and the amount of bleached or immature kernels. Sometimes the kernels are cut open to determine the degree of damage from

bleaching that has occurred. This may be the only way to decide upon the proper grade in which to place the grain. Inspecting officers at Winnipeg work under the constant supervision of the assistant chief inspector, to whom they may turn for assistance in difficult cases. Moreover, by watching the work of the inspecting officers, the supervisor helps to maintain uniformity of practice.

With a view to maintaining the same standard from month to month, each inspecting officer, after he has graded a sample, takes a handful of the cleaned wheat and places it in a pail used for that grade under his table. These pails are collected by helpers, and the grain used by the chief inspector or his deputy to make up average samples which will show the run of the grade from one month to another. These average samples do not leave the Inspection Department at Winnipeg, but are prepared for its own guidance. The experience of the Inspection Department is that the best grain comes in early in the season before it has suffered much weathering.

Since inspection must necessarily be carried on only by daylight, inspectors work during the season from 9 to 4 o'clock. With the aid of an assistant, who will weigh up the samples and prepare them for inspection, an inspecting officer may pass upon 250 samples in the course of a day's work. When inspection is completed the sample is placed in a tin box and filed. These samples are kept for some weeks until lack of storage space requires their removal. The department has had on hand at one time over 60,000 samples. The inspecting officer enters up the information on his identification sheet and this is sent in to the inner office. Meanwhile the clerks have been filling in the certificates from the larger sheet received from the yard office. They have all the information except the grade and dockage.

When this comes from the inspecting officer, it is placed on the large sheet first and then taken from this sheet and added to the certificate. The inspecting officer is required to check over his own certificates. This is done ordinarily at the close of the day. The certificates are then issued to the owner or accredited agent of the shipper.

Between 20 and 30 per cent of the cars opened for sampling at Winnipeg are found to be loaded too full to secure a regulation sample. It may be possible to make several probes but not seven to the bottom of the car. In that case, a sample is taken but the card placed in the bag bears the notation "H full", and the number of probes made. On this basis the car will be graded and a provisional certificate issued. When the car reaches the terminal, if the grading made at Winnipeg is confirmed, the provisional certificate stands; but if the grade be changed, the provisional certificate is cancelled and a new certificate is issued. In some instances cars are loaded so fully that the only sample that can be taken is from the top of the grain without entering the car. These "ladder samples" are not graded, but give some indication of the quality of the grain to the owner or shipper's agent who may wish to view it. Such cars are sampled and graded at the head of the lakes, and a certificate issued from that point.

Hitherto, when a farmer's grain was graded at the terminal there was little opportunity for the shipper to make an appeal against the grade given, because ordinarily the grain was unloaded and placed in the common bin containing the grade to which it had been assigned. The only way in which an appeal could be ensured was by giving instructions that if the car did not unload to a certain grade, the grain must be held separate for re-inspection or appeal. This course was sometimes taken, but the percentage of

cases where such instructions were given was very small. The installation of automatic samplers in the terminal elevators has led to a change in practice: the sample taken by the automatic sampler being considered to represent accurately the average quality of the shipment, and the grade on all cars being finally determined by it. The only difficulty in this procedure is that mentioned above; the grain will be binned before the farmer or his agent has had time to lodge an appeal. This difficulty is surmounted, however, by keeping track of changes made on appeal and making allowance for the same in adjusting the results of the annual weigh-up of the terminal elevator.

The inspection certificates that are issued at Winnipeg, on car inspections or when a car is received at the terminals, serve their function apart from supplying a basis of settlement to the shipper in designating the grade at which they must be taken into storage. In addition to the inspection certificate, the shipper has a warehouse receipt from the terminal elevator which states the weight and grade of the amount he has put into storage. The certificate may remain with the agent of the shipper but is usually returned to the owner of the grain with his warehouse receipts, or when he receives his statement of settlement. The important point is that the inspection certificates that accompany an export shipment of grain are not certificates that were issued originally in connection with the inspection of farmers' grain, when passing through an inspection point or upon receipt into a terminal elevator.

A large terminal elevator will have assigned to it for duty two inspecting officers, one of whom will be in charge. They will be assisted by as many samplers as are required. The junior inspector will attend to the inspection of cars inward while the other will handle inspections on outward ship-

ments. Following pioneer work by the Pool terminals all of the terminal elevators have installed automatic samplers for sampling shipments received. An automatic sampler consists of a belt equipped across its width at intervals with three or four small cups. This belt is so arranged that when it rotates, the cups remove a small portion from the grain being carried on the conveyor belt from the scales. The speed to which the sampler belt is geared will determine the amount of grain taken, but on the average about 14 pounds is removed for sampling purposes per carload. The quantity taken is then put through a divider which mixes the sample and splits it into smaller portions. The inspection department requires for its purposes about six pounds. The automatic sampler is a great advance over other methods of sampling, but it can only be used where grain is carried on conveyor belts. Hence with outward shipments, where the grain is spouted directly to the hold of the vessel, the older methods have to be followed.

The officers inspecting outward shipments at the terminals have a very responsible and difficult task. The grain is delivered with great rapidity to the boats, frequently with three or four spouts in use at the same time. The inspector with his samplers must take the grain as it flows into the vessel. His duty is to procure a fair sample, grade it according to the export standard sample, and make his report to the inspector in charge of terminals. It is not the custom of inspecting officers to advise the elevator company on the quality of grain being delivered to a vessel. The elevator company has to accept the risk that the grade of grain delivered will grade in accordance with the shipping instructions received. Since with cargo shipments the volume of grain covered by a single certificate may amount to several hundred thousand bushels, the spread in price between a

given grade and the next below may amount to a very large sum of money. Apart from this consideration, if the shipment turns out to be below the expected grade, it may involve unloading the cargo, since this lower grade will not fulfil the contract upon which it was intended to apply. Hence the inspectors responsible for grading cargoes work not only under difficult conditions, but with a heavy burden of responsibility. The rarity of complaints about these shipments is a tribute to the ability with which they perform their work. There are very few appeals. A portion of the samples drawn from each cargo shipment as a precaution is always sent for review to the Chief Inspector for Canada at Winnipeg, who is thus in the last analysis responsible for the quality of grain shipped from Canada. By means of these samples he is able to check up on the accuracy of the work performed.

In the press of the autumn shipping season, grain is loaded day and night into vessels for transportation down the lakes. Since it is considered impossible accurately to grade grain in artificial light, the Act provides that no inspecting officer shall inspect grain being laden or about to be laden on vessels or cars after dark or in bad weather, unless he considers the risk of error is not excessive and is in receipt, personally, or through the office of the chief inspector, of an application in writing from the owner or possessor of the grain relieving him from responsibility for damage or for loss from errors liable to occur in an inspection under such circumstances. In every case of such inspection the inspecting officer must be personally present when the grain is actually delivered on board the car or vessel. In no case may a certificate be issued until the inspector's sample of such lot is examined under proper conditions.

IV. RE-INSPECTIONS, SURVEY AND APPEALS.

The grading of grain is not determined by rigid mechanical tests, but is largely an act of judgment on the part of experienced officials with respect to the weight to be given to the various factors that affect the quality of grain. Since it is in part an act of judgment there is room at times for a difference of opinion between experts about the grade to which a given parcel of grain should be assigned. There is also the possibility that although all reasonable care is exercised mistakes may occur and the certificate may not agree with the quality of the grain. To guard against errors and to give a certain flexibility to the system, provision is made for re-inspection and an appeal against the judgment of the inspecting officer. When the owner of the grain or his agent is dissatisfied with the grade given by the inspecting officer, he can call for a re-inspection. What really happens is that the broker or grain company through which the farmer intends to sell the grain will send an expert to inspect the sample filed at the inspection office, and if he thinks there is a chance of securing a higher grade for the shipper, will call for a re-inspection. At Winnipeg, when this is done the grain will be re-inspected by the Chief Inspector or his deputy, and he may confirm, raise, or lower the grade and reduce or increase the assessment of dockage. At Calgary and Edmonton re-inspection is made by the inspecting officer at those points. Re-inspection is free of charge and is always resorted to when the owner or his agent has any doubt about the grade given by the inspecting officer. The decision on re-inspection is final unless it is appealed within twenty-four hours. Approximately 15 per cent of all cars inspected in the western division are called for re-inspection annually. Out of 75,049 cars re-inspected during the crop

year of 1928-29, 60,824 were left as graded originally; 8,658 cars had the grade raised and 813 cars had the grade lowered; 1,833 cars had the dockage raised and 2,921 cars had the dockage lowered.

If the parties interested are still dissatisfied they may carry an appeal in the western division to a Grain Appeal Tribunal. There are three of these bodies appointed by the Board of Grain Commissioners as a final court of appeal in Western Canada on grades and dockage. They are stationed at Winnipeg, Calgary and Edmonton. Each board consists of an official who must hold an inspector's certificate and who is designated the Appeal Inspector, and seven other competent grain men. The Appeal Inspector is chairman of the board to which he is appointed. None of the other members of the tribunal may be a member of the inspection staff. The Appeal Inspector must devote the whole of his time to the performance of his duties under the act and must not hold any other office or employment. If the appellant so desires he may call for a fresh sample, which will be procured at his expense and sent directly to the secretary of the Appeal Tribunal.

The Act provides that no appeal shall be considered in any case where the identity of the grain in dispute has not been preserved, unless the Board of Grain Commissioners authorizes the appeal to be entertained. The Board has availed itself of this power to rule that when at unloading a sample has been taken by the automatic sampler and preserved, an appeal may be carried from the decision of the inspecting officer within thirty days from the date of unloading. The sample of the grain under appeal is laid before the Appeal Inspector and two other members of the board selected by him, one of whom must be a representative of the producers. The decision of the board is final in settling

the grading of grain in dispute. In the crop year of 1928-29 appeals were called for on 11,515 cars. The original grade was confirmed for 9,970 cars, raised for 1,140 cars and lowered for 80 cars. Dockage was raised for 87 cars and lowered for 238 cars. Appeal Inspectors are salaried officials, other members of the board receive fees. Every application for appeal must be accompanied by a fee of three dollars. In addition a charge of 25 cents is made to cover express charges when it is necessary for an unload sample to be forwarded to the primary inspection point. When the decision of the inspecting officer is upheld the fee is retained by the Board of Grain Commissioners; when it is not upheld, the money is returned to the appellant.

Grain Appeal Tribunals have been set up in the Eastern Division at Montreal and Toronto. The members of these appeal bodies are appointed by the Board of Grain Commissioners on the recommendation of the Boards of Trade in each city. Since appeals on western grain can only be dealt with by a Grain Appeal Tribunal of the Western Division, the work of the eastern tribunals is very limited, and the chairmen are appointed from the membership of the tribunals. For the crop year 1928-29, five appeals were passed upon at Montreal and three at Toronto. In 1929-30, there was no appeal taken to either tribunal. The machinery, however, is available in case of need.

V. OFFICIAL WEIGHING.

Prior to 1913, the Chief Inspector acted as Chief Weighmaster, and the departments of weighing and inspection were operated substantially as one department. Many of the men in the weighing department looked forward to becoming grain inspectors, and were in fact absorbed from time to time by the inspection department, leaving the weighing branch

depleted of experienced men. In 1913, a chief weighmaster was appointed and the two departments were separated in their administration. The weighing department built up its own corps of officials. The number of employees in this department is now approximately 275 and staffs are maintained at 15 points in the Western Division. The largest number are located at the head of the lakes on account of the concentration of terminal elevators there. In addition to weighmen, with a view to assisting shippers in securing adjustments for loss from leakage, leak and seal inspectors work under this department in the railway yards at Winnipeg. These men examine all cars and report any instances of leakage or of cars where the seals are found to be defective. This service has proved to be of considerable value to the trade and to grain producers.

All grain at the terminals is weighed inwards and outwards by an official weighmaster or under his immediate supervision. Incidental to this operation a report is made on the condition of each car when it arrives at the terminal elevator. The weighman must satisfy himself that all grain received from the car reaches the weigh scales, and that there is no possibility of diverting grain from vessels or cars after it has been officially weighed outward. The Chief Weighmaster also acts as an elevator scale inspector under the Weights and Measures Act, and carries out semi-annual tests to ensure the accuracy of the scales. In the Eastern Division, this work is performed by the grain inspector in charge at Montreal. Nine weighmen in eastern elevators are official weighmen under the jurisdiction of the Board of Grain Commissioners. These men are employed at lake ports and at Montreal. Another duty of the weighing service is to weigh up the stocks in the terminal elevators annually at the close of the crop year. Their results furnish

the basis for adjustments in connection with overages in grades where mixing is not legal.

Complaints when they arise are investigated by the chief weighmaster, and adjustments are made where it is evident that errors in handling have occurred. In view of the large number of cars to be handled at each elevator and the speed with which the work has to be carried on, the record shows that the weighing department has achieved a high degree of efficiency. In 1929-30, out of 199,941 cars weighed, complaints were made in 44 instances. In 4 cases it was evident that a mistake had occurred in handling and adjustments amounting to 474 bushels were recommended. On the balance no grounds for a claim could be found.

One of the most troublesome features of weighing grain occurs with respect to reported shortages on the outturn of cargoes at eastern ports. This is a situation of long standing. In 1928-29 average shortages on vessels unloaded at Eastern Canadian ports amounted to 23.62 pounds per 1,000 bushels of wheat; other grain 41.12 pounds for 1,000 bushels. On cargoes discharged at American ports the average shortage was less, being 5.1 pounds per 1,000 bushels of wheat; other grain, 53.29 pounds per 1,000 bushels. The Chief Weighmaster, reviewing the results in 1926, declared that "some Bay ports and eastern elevators continue from season to season to report outturns close to the loading weights, while others show little variation in shortages reported from one season to another, but on the whole, outturns from Canadian ports are closer to the loading weights than outturns from American ports." On the other hand the returns for the year of 1928-29 show more favourable results for the American ports.

The situation has its intricacies. It is noted that while excellent returns are received from some elevators at both

American and Canadian ports, the returns from others are most unsatisfactory. Moreover, there is a great variation in average outturns for the crop year in the cargoes carried by the different shipping companies. The system of weighing employed at the terminal elevators at the head of the lakes for cargo shipments is uniform, and when investigations have been made in connection with vessel shortages nothing was discovered that would indicate that mishaps had occurred at the loading elevators. It is not improbable that with certain cargoes unfavourable conditions, such as high winds, may have reduced the outturn, but in other instances careless handling when the vessel was being unloaded appears to have been a factor.

VI. THE TARIFF OF CHARGES.

The tariff of charges fixed by the Board of Grain Commissioners to cover the official inspection and weighing of grain is intended to be as moderate as possible, having regard to the nature of the service performed. The charge for the inspection of grain in carload lots is one dollar per car. This fee is payable in the first instance by the railway company in whose possession the grain is at the time of inspection, except that for cars arriving at Vancouver originating on lines other than the Canadian Pacific and Canadian National railways, the fee must be paid by the manager of the elevator at which the car is unloaded. These fees are lawful charges against the grain, and are deducted from the settlement made to the owner.

When grain is shipped in carload lots from terminal elevators at Fort William, Port Arthur or Vancouver, the inspection fee is paid by the elevator company where the grain is weighed. The same rule applies to cargo shipments upon which the rate is one dollar per 1,000 bushels. It fre-

quently happens that shippers desire split inspection certificates. When a cargo certificate is surrendered and a request is made that it be split into certificates of smaller denominations, the fee charged is 10 cents for each split made.

Where grain has been treated or dried, and inspection is requested by a public or semi-public elevator for the purpose of securing a straight grade, the rate charged for inspection is 50 cents per 1,000 bushels. There is no charge for inspecting grain in connection with the annual weigh up required for public and semi-public terminal elevators. This rule applies also to private terminal elevators, where inspection is free on the four highest grades of red spring wheat, in which mixing is prohibited. In connection with the annual stocktaking the semi-public terminals are completely weighed over in order to check the correspondence of grain in store with the account of outstanding warehouse receipts.

Grain is frequently delivered by wagon or truck load direct to terminal elevators located at interior points and in British Columbia. The fee for the inspection of this grain is at the rate of one dollar per 1,000 bushels with a minimum charge of 10 cents. From time to time an inspection certificate is requested for a sample of grain that has not been officially drawn. In this instance the certificate merely certifies to the quality of the grain in the sample. The fee is one dollar.

The scale of fees in connection with giving official weights for grain is on the same basis as inspection fees.

At a number of private, mill and manufacturing elevators, the inspection and weighing services are required full time, but the fees received do not cover the expenses of maintaining the services at these points. Where this occurs, the elevators are liable for the difference between the salaries paid the employees of the Board and the amount of revenue

received. These arrangements cover milling points such as Medicine Hat and Keffora. These points are not compulsory inspection points under the Act, but the Board of Grain Commissioners is authorized to make provision for inspection and weighing services at such places as it considers to be in the public interest.

VII. GARNET WHEAT.

The Grain Act provides that No. 1 Manitoba Hard and No. 1 Manitoba Northern red spring wheat shall consist of Marquis wheat or varieties "equal to Marquis." Until the revision of the Act in 1930, the decision upon the varieties of wheat to be considered equal to Marquis in practice rested with the Chief Grain Inspector of Canada, who instructed his officials what wheats were to be allowed in the top grades of the Manitobas. The Act of 1930 places the responsibility upon the Western Committee on Grain Standards, who select and settle upon the samples that guide the Inspection Department.

From time to time new varieties of red spring wheat make their appearance, and it is of great importance to growers whether these new varieties shall be considered equal to Marquis or inferior. An example is afforded by Garnet wheat. This wheat appeared upon the market in the spring of 1926. In 1927 the Inspection Department decided that the maximum grade that should be allowed for this new variety should be Number 2 Northern. This decision created considerable dissatisfaction, which was expressed in numerous letters to government departments, members of parliament and in newspaper articles. The Chief Inspector stated that the ruling of his department was based on published statements appearing in bulletins and publications issued by the Dominion Experimental Farm Branch, and by the

Grain Research Laboratory at Winnipeg. Because of this, the Inspection Department felt that the grade given to Garnet was a proper one, since evidence available had not established its equality to Marquis. The conclusions of the Inspection Department were supported by the Canadian millers who stated that Garnet wheat did not possess as high a milling value as Marquis.

In 1928 no change from the grade allowed in 1927 was made. But in 1928 added importance was given to the grade that should be allowed Garnet by reason of the early frost of that year, which injured severely the later maturing varieties of wheat, whereas the early maturing Garnet suffered practically no frost injury. Thus Garnet though fully matured, undamaged by frost and of good weight and quality could not grade higher than No. 2 Northern. The farmers were dissatisfied, and as a result of their complaints a conference was called by the Federal Minister of Agriculture in February of 1929. At this conference the chief chemist of the Board of Grain Commissioners reported that Garnet when judged by the ordinary standards was not considered quite equal to Marquis. It was finally decided to secure further evidence from old country millers and others with respect to the milling and baking qualities of Garnet.

With a view to securing as complete a test as possible several thousand bushels of Garnet wheat were shipped to millers in Great Britain and on the continent. A small shipment of Garnet and of Manitoba of the same grade was also sent to the state testing mill at Minneapolis. The Dominion Cerealists and the chief chemist of the Board of Grain Commissioners were sent over to Europe in connection with the tests being made by the European millers. Some 20 different milling firms co-operated in making tests of Garnet. These firms were almost unanimous that Garnet should not be

mixed with Marquis in the top grades. The general view was expressed as follows: "Garnet wheat both in milling and baking has certain pronounced characteristics. Millers will always be faced with the fact that Garnet will give stability to their blends but not quite the spring and elasticity which is normally given by Manitobas."

The result of this report was that the Board of Grain Commissioners undertook to collect information upon the amount of Garnet entering into the Canadian wheat crop to determine whether there was sufficient volume to warrant the establishment of separate Garnet grades. In the meantime Garnet continued to be admitted into the Manitoba grades up to and including No. 2 Northern. Investigation revealed that between August first and December 31 of 1930, 19,442 cars of Garnet wheat had passed through western inspection points. This represented 15.17 of the total inspections of wheat during the period. It was also noted that approximately 45 per cent of Garnet shipments had been to the port of Vancouver. Moreover, the development of a spread in price on No. 2 Manitoba Northern discriminating against the shipments from the port of Vancouver was held to be due to the foreign miller's objection to Garnet. In February of 1931 the Associate Committee on Grain Research of the National Research Council reported that it considered Garnet to differ in quality from Marquis, and recommended the establishment of separate grades. The proposal is to establish these grades for the crop of 1932. It is foreseen that if separate grades for Garnet are established this may mean, for a time at least, that Garnet wheat may sell at some discount under Marquis and that growers should be given an opportunity to produce other wheat. The Research Committee believe that Reward wheat, which is equal to Marquis, is a sufficiently early

maturing to serve the purpose of those who have grown Garnet to escape frost damage. By the spring of 1932, it is estimated that there will be sufficient Reward wheat available for seed to enable all those who wish to replace Garnet to secure supplies. At its autumn meeting in 1931, the Western Standards Committee passed a formal recommendation endorsing the establishment of grades of Western Canada Garnet Wheat. Under these circumstances it is possible that the amount of Garnet wheat grown in the Canadian west may show a sharp decline.

VIII. PROTEIN CONTENT AS A BASIS FOR GRADING WHEAT.

For a number of years an important agitation was carried on in favour of utilizing the protein content of wheat as a basic factor in grading. The steps by which this agitation developed are of some interest. For many years it has been well known that bakers favoured a strong flour which not only had the ability to produce large well-piled loaves of good texture, but also to produce more loaves to the barrel than a weak flour. It was further well known that the large Canadian mills, in selecting wheat to grind, did not make their selections wholly on the basis of the grades set by the Inspection Department, but were also guided by the results obtained from analyses made by their own chemists. These analyses established that each year certain districts produced wheat that was distinctly above the run of the average of the crop in strength.

But what really brought the importance of high protein content home to the individual grain grower was the condition created by the high price of wheat at the end of the Great War. In the United States the large bakeries found that it paid to analyze the flour purchased to establish its protein content. Flour that would make 320 loaves to the

barrel, and flours that would make 340 loaves or even more, were on the market. With bread selling in some places at as high as 20 cents a loaf, a difference of a few loaves per barrel of flour with mass production became of great importance. The demand of the bakers for flour with a high protein content was reflected through the millers upon the American wheat market. Grain merchants found that it was much easier to sell wheat if they could guarantee its protein content. By the year 1921, so common had this practice become at certain markets in the United States, the lack of a protein analysis for a car of wheat was tantamount to a confession that the protein content was so low that the seller did not wish to make it known.

The effect of this emphasis placed upon protein content in wheat was to upset the grading systems, much like our own, in vogue in the United States. A thin wheat with a light test weight per bushel, and therefore given a relatively low grade by the official standards, would command a higher price than a heavier wheat with a higher official rating, provided that its protein content was sufficiently superior. Sixty-two pound No. 1 wheat was known to sell for less than 57-pound No. 3 wheat. American grain buyers began offering a basic price for wheat with a premium determined on the basis of the protein content.

Canadian grain growers were directly interested in this development because it seemed to suggest a method of selling wheat upon its milling value, but particularly because certain American mills, before the duty was increased upon imports of Canadian wheat into the United States in 1924, were reported to be buying wheat in Canada through Canadian dealers on the basis of a guaranteed protein content. This report strengthened the demand for an investigation into the merits of protein grading. In 1928 the House of

Commons passed a resolution recommending that the National Research Council of Canada in conjunction with the Board of Grain Commissioners should be asked to conduct an investigation, and make a report upon the feasibility of employing protein grading as part of the Canadian system of grading wheat.

A very thorough investigation was conducted which covered both the United States and Europe.² In favour of using the protein content of wheat as a basis of grading, it was pointed out that in the United States the payment of premiums to producers for high protein wheat had not reduced the price of the remainder of the crop, but that in the main the increased total payment for the wheat crop had apparently been carried by the bakers because of their insistent demand for a standard high protein flour. The technical difficulties of Canada establishing protein testing laboratories were noted, but were not held from the standpoint of expense or of delaying the movement of the crop to be insuperable. However, the conclusion was reached that the notation of percentage of protein upon the present grade certificates was scarcely practicable. A sample market upon which wheat could be bought and sold strictly upon its merits appeared to be the only solution.

The danger of attempting to apply to Canada the experience of the United States, without keeping clearly in mind essential differences in the situation of the two countries, was emphasized. The United States has a large domestic market which absorbs over 80% of the crop of hard wheat. Canada, on the other hand, exports approximately 70% of her total crop. World conditions determine

²*Interim Report on Protein Content as a Factor in Grading Wheat.* National Research Council Bulletin, No. 13, Ottawa, 1925. Newton, R., *Report on the Inquiry in Europe Regarding the Feasibility of Using Protein Content as a Factor in Grading and Marketing Canadian Wheat.* National Research Council, Ottawa, 1930.

the price of export wheat, whereas local conditions determine protein premiums in the United States. It was pointed out that the wheat crop of the United States averages much lower in protein content than the Canadian crop and the quality of high protein content is correspondingly smaller. Protein testing is used wholly in connection with sample markets, a system of marketing that has not developed in Canada. The conclusion drawn from investigations in Europe was that there was no marked demand for protein grading of Canadian wheat in Europe. The European millers and bakers did not place such a degree of importance upon protein content as the Americans. On the whole, they preferred to buy Canadian wheat upon the present grade basis.³

The situation appears to be, therefore, that Canada would have considerable difficulty technically in establishing a system of grading upon a protein basis, and that such a system to function with satisfaction would need a reorganization of marketing methods to provide sample markets. Even if these objections were met, there would not be a definite demand for protein grading from foreign buyers, who buy the great bulk of Canadian wheat. Many are definitely against it because of the additional difficulties in marketing it would produce. The investigation cannot be said to favour the introduction of protein content as a basis of grading wheat. But, it is to be noted, that the importance of the usually high protein content of our wheat is fully recognized by foreign purchasers. The Grain Research Laboratory, under the chief chemist of the Board of Grain Commissioners, by preparing analyses of the new crops as they come in, and of the protein content of the standard export samples

³ B.R. Newton, *Report on Inquiry in Europe Regarding the Feasibility of Using Protein Content as a Factor in Grading and Marketing Canadian Wheat*. King's Printer, Ottawa, 1930.

determined annually by the Western Grain Standards Committee, makes available to the trade as early as possible full information concerning the protein content of current stocks of Canadian wheat.

IX. DRYING OF WHEAT.

From time to time the western grain grower has to contend with a wet harvesting season. When this occurs his wheat as threshed is apt to contain excess moisture. If not promptly dried, it is liable to go out of condition through heating and to be severely damaged thereby. So serious is such a possibility, that the Grain Act provides that if the Board of Grain Commissioners believes there is this danger at any country point, it may direct the placing of cars there out of regular turn to enable such wheat to be shipped immediately to the terminals for drying.

When it passes through the inspection point, this wheat will not be given a straight grade, but will be classed of its grade with the added notation "tough" or "damp" depending upon the exact amount of moisture in the grain. Tough wheat contains over 14.5 per cent and not over 17.0 per cent while damp wheat contains over 17.0 per cent of moisture. At the terminal this wheat may have its moisture content reduced by mixing with it dry grain of the same grade, or it may be necessary to put it through the driers after which, if a milling test shows no signs of damage, on regrading it may be placed in the grade to which it was originally assigned.

Rarely a year passes but tough or damp grain is reported from some part of the grain growing region. In some years the proportion of the wheat crop containing excess moisture is so large that the warehousing and drying of it becomes a really great problem. To take the figures for the last five

years available as an example, the crop of 1924 showed a percentage of 11.6 tough or damp wheat; 1925, 28.7; 1926, 50.8; 1927, 43.34; and 1928, 1.53. The larger the amount that is tough or damp the more acute becomes the problem of handling it. If the crop as a whole is generally dry as in 1928 and there is only a relatively small amount of slightly tough wheat, the latter can be mixed with the straight grade and safely warehoused with the dry wheat which will absorb the excess moisture. There is no technical problem. But where the amount is large as in 1926 and 1927 or there is a marked excess of moisture in the individual carload lot, resort must then be had to artificial drying.

The unprecedented volume of tough and damp wheat for the three wet seasons of 1925, 1926 and 1927 led to an investigation by the National Research Council with a view to reducing losses to the growers.⁴ Tough or damp grain carries a discount in price which varies from four to eight cents below the price for the corresponding straight grade. In addition, when the settlement is made the weight of the wheat is reduced to its presumed weight after drying. The reasons for this discount are to be found in the risk of the grain going out of condition before it can be dried, the cost of drying, and the popular belief that wheat that has been artificially dried is of inferior quality. Artificially dried or bleached wheat loses its natural lustre. In 1926-27 the quantity of artificially dried wheat mixed with wheat that had not suffered from excess moisture led to complaints from the English importers that the baking quality of the flour milled from No. 3 Northern, the grade chiefly affected, had been seriously deteriorated. This unfavourable opinion led to a widened spread in prices between No. 2 and No. 3 Northern.

⁴ National Research Council, Report No. 24, *The Drying of Wheat*, Ottawa, 1929.

In the autumn of 1912 the facilities for drying grain in Canada were so limited, that a large floating commercial drier was towed from Duluth to Fort William, to provide additional equipment in an attempt to cope with the extremely serious situation of that year. Since 1912 the necessity of equipping terminal elevators with drying machinery has become fully recognized, even though this machinery may lie practically idle for two or three years in succession. Practically all of the terminal elevators now have driers installed. The tariff for drying tough wheat is, three cents per bushel, and for damp wheat, five cents per bushel.

Four different makes of driers are employed in the elevators of Western Canada. All the makes and models are alike in their general construction and operation.⁵ They consist of a metal shaft or tower, of rectangular cross section, into which the moist wheat is fed at the top and from which the dried wheat is removed at the bottom. Hot air is blown through the wheat in the upper half of the shaft in order to dry it, and cold air is blown through the wheat in the lower half of the shaft in order to cool it again, so that it may be safely stored in the bins. The whole shaft is regarded as a drier, but the upper half is sometimes referred to as the drier or heater section, in distinction to the lower half or cooler. The wheat travels by gravity down through the heater and then through the cooler, but there is usually a valve between the two sections which can be closed if desired. The hot air entering the wheat quickly absorbs the moisture and is drawn off through exhausts. The travel of the air through the wheat is generally between six and eight inches, the aim being to allow the hot air time to give up its heat. The chief technical problem is to ensure that there shall be no inequality of drying, no wheat over-dried

⁵Ibid, p. 29.

and damaged and no wheat left with excess moisture content. This is accomplished by various devices in the different types of drier. In one type, the drying air enters from both sides; in others, the grain is continually being reversed in position, or the air current in each section passes through the grain in the opposite direction to the current above.

The most vital difference in the operation of the different driers is the way in which the grain is moved. Four distinct methods are employed. (1) Continuous discharge, where the feed of grain into the drier and the flow down through it is controlled by the discharge arrangements at the base. (2) Intermittent-continuous discharge, where discharges of from 30 to 40 bushels at intervals of from one-half to two minutes are made automatically. (3) Batch drying, where the heater is filled with grain and hot air passed through it until it is sufficiently dried. (4) Modified batch drying, where the grain is handled as in batch drying but one or more times during the drying period a little grain is discharged to stir up the grain left in the heater. The range of temperature of the drying air employed has been recorded as being between 150 deg. and 230 deg. F., but it has been suggested that part of the difference is due to errors of measurement.

The investigation by the National Research Council established that sound wheat, under suitable conditions of drier operations, could be safely dried with heated air at 180 deg. F. Above this, injury to the wheat appeared to be roughly proportional to the rise in temperature. Batch drying was condemned because of the risk of damage, but the other methods were found suitable to the purpose. In batch drying, the wheat which happens to be near the hot air inlet tends to become over-dried and baked, whilst that which is close to the air outlet may remain tough. It also pointed

out the necessity of exercising caution in drying damp wheat containing over 18 per cent moisture. The Canada Grain Act provides that the manager of every terminal elevator must have such drying equipment as the Board of Grain Commissioners may deem necessary. It also gives this body the power to make regulations governing the methods to be employed in operating driers. By this means it is hoped to establish uniform methods of drying which will recondition tough or damp wheat without injury to its milling and baking qualities. The prejudice that has existed against dried wheat would appear to have been due to unstandardized and unscientific methods of operating the driers.

The Department of Trade and Commerce have just finished construction of an interior terminal elevator at Lethbridge. In this elevator a new type of drier is being installed. This is a vacuum process grain drier which was developed in Sweden. The excess moisture in the grain is removed by absorption and it is possible to achieve this removal without excessively high temperature. The installation is admittedly experimental, but if it proves successful will undoubtedly be adopted at other points. Apart from cheaper operation, the great advantage claimed for this type of drier is that it does not injure wheat through over-heating.

X. DECENTRALIZATION OF THE INSPECTION SERVICE.

An interesting question of policy that arises in connection with the inspection service is whether the sampling and inspection of cars of grain should be concentrated as far as possible at one point, or whether it should be decentralized and inspection points located at numerous places upon the prairies. When all grain was shipped out of Canada via the eastern route, the great bulk of inspections were made at Winnipeg. The Winnipeg railway yards were laid out to

serve this purpose and a large staff of inspectors worked from day to day directly under the eye of the Chief Inspector.

The advantages of this system were obvious. The railways were able to make their arrangements to facilitate the movement of grain with the least disturbance. The standards applied by the deputy inspectors were subject to the continuous supervision of the Chief Inspector for Canada, and it was possible to achieve a very high degree of uniformity in results. But even at this date certain grain was inspected at other points. Cars which passed through Winnipeg, but were found to be too full to give a proper probe sample, had to be inspected at unload at the terminals. A small amount of Canadian grain went out by Duluth, and it was found necessary to station an inspector at that port to give this grain an official grade. Medicine Hat in Alberta, and other important milling centres, obtained inspection service. But Winnipeg inspection was the general rule. The erection of interior storage elevators at various cities in the west made it necessary to supply them with inspection service. This cut off a certain amount of grain from Winnipeg inspection but not an appreciable quantity.

The opening of the Pacific route was a more important factor in decentralizing inspection. Grain destined for the Pacific route passes through Calgary and Edmonton, and does not come near Winnipeg. The inspection service had to take care of this situation and provide for inspection at these cities and at Vancouver at unload when necessary. So far it might be said that necessity had determined the course of events. But a step was taken in favour of a policy of decentralization when Edmonton and Calgary were made compulsory inspection points for all grain passing through them, and when Moose Jaw and Saskatoon were allowed to

become voluntary inspection points. In the case of the latter two cities, any shipper whose grain passed through could require that it be inspected there, or go forward until it reached, a compulsory inspection point. Saskatoon and Moose Jaw have both urged their right to be made compulsory points, but although so far parliament has refused to accede to their demands, it has passed the problem on to the Board of Grain Commissioners, who have power to give effect to their requests by regulation.

The returns for the crop of 1928 show inspections to be as follows:

	Bushels.
Calgary	61,966,272
Duluth	1,502,531
Moose Jaw	50,011,134
Saskatoon	8,511,525
Medicine Hat	4,572,792
Winnipeg	397,845,953
Vancouver	2,247,600
Edmonton	50,331,860
Prince Rupert	53,933

Unquestionably, if Saskatoon and Moose Jaw were made compulsory inspection points they would appreciably reduce the amount of grain now inspected at Winnipeg. Against the passing of such a regulation, the railways claim that it would slow up the movement of grain from beyond these points, and the large grain companies with headquarters at Winnipeg would be put to the additional expense of maintaining men to check the grades placed on the grain with a view to appeal if necessary. In favour of making these cities compulsory inspection points, it is urged that voluntary in-

spection delays the grain movement more than compulsory inspection, since individual cars instead of trains have to be dropped at this point in accordance with the instructions of the shipper. It is also pointed out that the terminal elevators at these cities will be feeders to the new port, of Fort Churchill to the degree that grain is shipped by the northern route.

The essential point is that with approximately one-third of the crop being inspected at eight points other than Winnipeg, the grading service is in fact decentralized. The situation throws a heavy burden upon the Chief Inspector, who is responsible for keeping the work of the deputy inspectors as uniform as possible. This task is the more difficult since at places where inspections are comparatively light, few deputies are employed, and they are apt to find it difficult to keep in step with the inspectors at the larger centres. There is a tendency either to play safe by interpreting the regulations with undue strictness, or to fall into the error of letting down the grades. Both faults are productive of dissatisfaction. It speaks well for the service that few complaints have arisen upon this score.

The Canadian grain trade plays such a large part in the life of the people of western Canada that its methods are under constant review and many suggestions are made regarding changes in the details of its organization. In certain instances suggestions emanate from groups who believe that the present system does not give them a fair deal, in other instances suggestions come from business centres anxious to share in the benefits of the trade, and in still other instances they represent a genuine desire to increase the general efficiency of the Canadian system of handling and marketing grain. Nowhere do more problems arise than with respect to the Inspection Service. This is easily understandable,

since every grain grower comes into direct contact with the work of this department. The grade that a farmer obtains for his grain is the important factor in determining the amount of remuneration he receives for his year's labour. Hence the individual farmer is vitally interested in the methods employed for determining standards of excellence.

CHAPTER IX

THE EASTERN ROUTE

WE have already noted that the twin cities of Port Arthur and Fort William constitute the eastern terminal of the western grain trade. When western grain leaves this point, it has been finally inspected and graded, has passed out of the farmers' hands, and seeks the domestic or export market. Port Arthur and Fort William are the head of Canadian navigation on the Great Lakes and St. Lawrence waterway system and are located on the west side of Thunder Bay in Lake Superior. The two ports are side by side and are practically one harbour development with diversified types of improvement over an extensive area of river channels and lake frontage protected by breakwaters.¹ Between 1883, when steel first connected Thunder Bay with Manitoba, and 1920, Port Arthur and Fort William handled practically all the grain exported from the Canadian west. By every test they are the most important grain terminals in Canada. Their facilities have grown by leaps and bounds to keep pace with the expansion of grain growing on the prairies. To the head of navigation come the lake carriers loading for the Georgian Bay and lower lake ports, some canal boats accepting cargoes for Montreal or Quebec, and from time to time small ocean tramps, which have ventured through the canals along the St. Lawrence to load a cargo of wheat direct for Europe. In the winter there are shipments to the east by rail. .

¹See page 143.

Fort William, at the mouth of the Kaministiquia river, is much the older settlement. Its history goes back to the days when the French under La Vérendrye had a post there and made it the starting point for a water route through to the prairies. Later this channel of travel was forgotten, and was only rediscovered in 1798 by Roderick McKenzie of the Northwest Company. In accordance with Jay's Treaty, of 1794, the international boundary line was delimited, and Grand Portage, the company's headquarters further along the lake, was found to be in the United States. The Northwest Company selected the site of the old French post for its new western headquarters, and built a fort there in 1800 which was named Fort William, after William McGillivray, a principal partner in the company.

The modern city is situated on an estuary of the Kaministiquia river which bifurcates twice within $2\frac{1}{2}$ miles of the mouth. The two subsidiary outlets are known as the Mission and the McKellar rivers, emptying into Thunder Bay about $2\frac{3}{4}$ and $1\frac{1}{8}$ miles respectively from the main mouth. Entrance to the river was long hampered by a bar formed at the mouth from silt. The three streams have been dredged and channels have been cut through this bar into the Kaministiquia and Mission rivers. In all there are 13 miles of improved river channel with an available dock frontage of $22\frac{1}{2}$ miles.

Port Arthur lies directly to the east of Fort William, and was an open roadstead until the construction of a break-water converted it into a commodious harbour with a water front five miles in length. Port Arthur was originally known as Prince Arthur's landing, after the Duke of Connaught. It was named by officers of his regiment who landed at that point on their journey westward to take part in the repression of the rebellion of 1870 in Manitoba. Later the name

became Port Arthur. The first elevator was built in Port Arthur and completed in 1884. This elevator stood until 1923, when it was replaced by a modern construction. The second elevator to be built was located at Fort William and was finished during the winter of 1885.¹ Port Arthur had deeper water than Fort William and the grain vessels at first were reluctant to go "up the river" for cargo. The grain had to be reloaded into cars and carried to Port Arthur. However, the resident engineer of the Canadian Pacific Railway took the view that there was sufficient depth of water at Fort William for safe navigation, and piloted the S.S. *Algonia* to the elevator there. She was duly loaded and taken out with little trouble. This occurred in June of 1885. Thereafter vessels continued also to load at Fort William, and more elevators were located there. Fort William has now 12 elevators with a storage capacity of 40,150,000 bushels on the water front, against 15 elevators with a storage capacity of 52,442,210 bushels on the water front at Port Arthur.

I. THE LAKE SHIPPERS' CLEARANCE ASSOCIATION.

The extent of the water front at the lake head enables vessels to move freely to their loading stations, but despatch is greatly assisted by the Lake Shippers' Clearance Association. This organization was formed in 1909 with seven or eight members originally. The membership now numbers 58, and is restricted to grain shippers who are members of the Winnipeg Grain Exchange or any other grain exchange of recognized standing. It is a co-operative mutual association, organized to operate as a clearing house for grain documents somewhat on the principle of a bank clearing house. By combining all the documents of the different shippers, it aims to give the maximum of despatch in load-

¹On page 27 for 1884 read 1885.

ing, and to increase the movement by rail by combining shipments, so that cars can be distributed to the best advantage to the terminal elevators for loading. It is possible to make use of a clearing system when the identity of the individual lots of grain placed in the terminal is not maintained, but delivery is made on the basis of an official 'certificate of grade and weight. The Lake Shippers' Clearance Association brings together co-operatively the shippers, terminal elevators, vessel owners and the banks.

When a shipper accumulates a parcel or cargo of grain for shipment, his warehouse receipts to cover the amount are certain to represent claims on various elevators on the water front, and without a clearing house he would have to send his boat to every elevator against which he held warehouse receipts. To obviate this necessity the Clearance Association was formed. The shippers deposit with the Association their warehouse receipts which are pooled by the Association. As a result the latter finds that it controls a certain volume of grain in each of the elevators. In return for his warehouse receipts the shipper receives a Lake Shippers' Certificate which specifies the quantity and grade of grain covered by the documents deposited. If the shipper wishes to sell his grain, he is able to transfer his certificate to the buyer, or he may employ it to make a shipment himself. In any event, when a shipment is to be made, the holder surrenders the document to the Association and gives an order to load on a specified vessel, with the date it is expected to be in port. The order contains instructions about the bills of lading, the rate of freight and an authorization to sign a release for the inspection department if night loading be necessary.

The shipper's order is followed by a statement from the vessel broker showing the name of the vessel, name of the

shipper, and grade and quantity for his vessel. The shipper's orders are checked against the broker's list to prevent error. All this information is received at the Winnipeg office of the Association and particulars are wired to the Fort William office. The Association maintains a leased wire to carry its business.

The Fort William manager, having in his possession complete orders from the vessel broker and from the shippers, turns to his stock sheet, which contains a recapitulation of the amount of grain that the Association controls in every terminal on the water front. He is thus able to determine where to send the vessel to be loaded with the greatest advantage. If certain elevators are becoming congested, they may be used in order to conserve the receiving capacity of the ports.

If the vessel is equipped with wireless it will notify its agent that it will arrive at a certain time. The Clearance Association will then advise the agent that the boat is to load or to begin loading at a certain terminal. Thereupon the agent informs the vessel, which proceeds without delay to the elevator designated.

In the meantime the Association has telephoned to the elevator instructions to load certain quantities and grades in certain holds of the vessel, corresponding with the shippers' orders. The instructions are first telephoned and then confirmed by written order. When the vessel completes loading its lot at the elevator, the latter reports the details, and if that completes the cargo the Association secures from the Inspection Department official grade and weight certificates to cover the quantity and grades loaded into the different holds of the vessel. At the same time bills of lading covering the cargo are made out according to the shippers' instructions. When these documents have been completed they are

first listed on a form made out in triplicate, and then forwarded to Winnipeg. One copy of the form is retained at Fort William, the second copy is retained in the Winnipeg office and the third goes to the shipper or the bank as the case may be. The form is used as a receipt for the documents covering the cargo.

As the Association receives warehouse receipts from shippers it turns them over to the terminal elevators, where they are held in trust. When a shipment has been completed at an elevator it charges the Association account with the quantity and grade loaded. It then cancels the documents on call with it to the extent of the shipment, and presents the receipts to the registrar of the Board of Grain Commissioners for cancellation. This completes the routine of shipment in the ordinary way.

Shippers are accustomed to turn over their warehouse receipts to the Association as they accumulate grain, and this facilitates shipments by placing under the control of the Association a larger volume of grain. The Association keeps two sets of accounts, one with the shippers to show the quantity and grade of grain credited to each man, the other with the elevators to indicate the claims against each house and the shipments made. Weekly statements are submitted to the shippers.

The utility of the system has been recognized by every one connected with the grain trade, including the banks. At the revision of the Bank Act of 1923, the term warehouse receipts was made to include Lake Shippers' Clearance Association receipts. The advantage to the banks lies in the fact that before the Clearance Association was formed, when money was loaned on the security of warehouse receipts, and a shipment out was desired, the receipts had to be surrendered and a bailee's receipt taken while the transaction

was being completed. This involved risk. Now the papers are placed with the Association and the bank accepts its receipt until the proper documents are returned to it. Hence we have the recognition of the Lake Shippers' Clearance Association in the Bank Act.

But the great advantage of the Association is the time it saves in shipping grain. Prior to its organization, each shipper had a representative at the head of the lakes who might find that the grain to be shipped was located in several elevators. As a result the vessel would have to make frequent changes in loading position. Moreover, with four or five brokers attending to the loading, each unaware of the plans of the other, it would happen that several boats would be waiting turn at one elevator with the slips at two or three other elevators vacant. The largest boats engaged in the trade when the Association was formed carried approximately 300,000 bushels. If one of these happened to load during the fall period it usually took four or five days before it was cleared. Under the present system if a vessel arrives during the night, it is usually loading by 7.30 the next morning. During the fall period, when grain is plentiful and everyone is working at maximum capacity, a ten thousand ton boat is usually loaded in seven or eight hours. Very seldom does it require a second day, with even the largest boats on the lakes, which now have a capacity in excess of 500,000 bushels. The convenience of loading at Fort William and Port Arthur is generally appreciated by the carriers. It has been stated that even the average American vessel owner prefers to take cargo at the Canadian head of navigation on account of the better handling facilities.

The Association derives its income from three sources. The vessels pay anywhere from 10 to 40 cents per thousand bushels, depending entirely upon the despatch given. If a

vessel carrying over 2,000 bushels of wheat is loaded within 24 hours, the payment is 40 cents per thousand to the Association; if loaded within 48 hours, 30 cents per thousand; sixty hours, 20 cents per thousand, and over 60 hours, 10 cents per thousand. In addition, shippers pay at the rate of 30 cents per thousand. Finally, since every warehouse receipt carries 15 days free storage, the Association has found it possible through the process of clearing to save considerably on storage charges for the shippers. These savings are retained, and are part of its income.

The Association had not long been in operation before the members realized that a substantial cash reserve should be accumulated to give it a financial standing in keeping with the volume of business handled. In order to accomplish this it was agreed that the Association should retain all surpluses over operating costs until a satisfactory reserve was built up. In this way a substantial reserve was built up, which has enabled the Association to stand severe losses, such as those growing out of the failure of one terminal elevator during the winter of 1930.

As a further security for its members and clients, the Association negotiated with Lloyd's, and secured a policy of \$500,000 covering all elevators or any one elevator if required, insuring the Association against any loss or damage through the collapse, by accident or otherwise, of any elevator included in the policy. This policy is maintained so that shippers and banks holding the Association's receipts have a security equal to that of ordinary grain documents.

The latest performance records of the Association naturally reflect the lessened trade in Canadian grain during the last year and one-half. Grain shipped through the Lake Shippers' Clearance Association by vessel for the crop year ending July 31 of 1930 amounted to 171,096,882 bushels.

This may be compared with the preceding year, where the total of shipments amounted to 375,798,340 bushels. The fall shipments for 1930 amounted to 145,348,560 bushels against 96,690,520 bushels for the fall of 1929 and 275,289,435 for 1928. For the navigation season of 1930 there were total shipments of 219,754,922, for 1929, 197,199,425 and for 1928, 403,804,339 bushels. Wheat shipments represent approximately 80 per cent of the total. For the season of 1930, 117,255,555 bushels of grain were carried in Canadian boats to Canadian ports, 5,856,884 bushels in Canadian boats to American ports, and 96,642,4838 bushels in American boats to American ports.

II. THE BULK FREIGHTER.

The enormous tonnage of grain that moves down the Great Lakes in bulk had its small beginnings. The carriage of grain from the west by water began first with the United States. In 1836 a small cargo reached Buffalo from Grand Haven on Lake Michigan. The first arrival from Chicago occurred in 1839. A full cargo—3,000 bushels—was received from Lake Michigan in 1840. In 1841 the first recorded shipment of wheat, consisting of 4,000 bushels, was despatched from Milwaukee to a Canadian port. These small cargoes were carried in sailing vessels, and with the demands of trade and improvements of channels, shipments increased in size. Grain from Lake Superior did not move eastward until much later. The first record of a shipment of wheat from Lake Superior ports by water to lower lake ports, is for the year of 1870, and the shipment is said to have consisted of 49,700 bushels. It was in 1870 that Duluth obtained western railway connections.

The sailing vessel was followed by the steam barge, capable of carrying approximately 600 tons. Another type

of vessel developed was the whaleback. In 1892 a vessel of this design carried a cargo of 70,000 bushels to Liverpool direct from Duluth. The whaleback has long since ceased to be built for traffic on the Great Lakes, but it has influenced the construction of the turret type, a few of which remain in service upon the Great Lakes at the present time.

The latest stage in the evolution of lake steamers has been the construction of the modern bulk freighter. These vessels are peculiar to the Great Lakes. They owe their existence to the demand for steamers of vast carrying capacity, but able to navigate narrow channels of relatively shallow depth. One factor in the increasing length of these vessels has been technical improvements in structural iron and steel, which enable elongation to take place without over-stepping the margin of safety. But by reason of their length and narrowness the lake carriers are unfitted for deep sea service. The heavy swells of the ocean would break them up. Another factor in their development has been the creation of special facilities at termini for loading and unloading. Ore, grain and coal, their principal cargoes, are loaded and unloaded mechanically by appliances at the dock, and the vessels do not need to be outfitted for this purpose.

The bulk freighters are constructed to standards which permit of the greatest efficiency in loading and discharging cargo. As a class they are probably the most economical carriers of bulk freight yet devised. The typical bulk freighter has its engines placed far aft, a location unsuited for deep-sea navigation, and its quarters in the extreme forward end. All the space lying between is unobstructed cargo hold. The hatches are separated only by the width of the thwarts, which are usually 12 feet between centres. There are no bulkheads or compartments in the hold. The usual number of hatches is between 12 and 30, although

some vessels have as many as 40. Vessel dimensions and hatches have a direct relation to the loading facilities. The discharging pockets of ore piers are designed on a 12 foot spacing, and the grain spouts for shipping grain from the terminal elevators are co-ordinated with the ship's hatches. This permits the loading of the vessel with the greatest possible despatch.

The size of the bulk carriers has steadily increased. In 1902 a maximum length of 440 feet was established. In 1906 seven vessels in the 600-foot class took the water. The type of bulk freighter which has attained the most economical operating proportions is the so-called "600-60-32 class" whose gross tonnage is from 7,400 to about 8,200 tons. Generally speaking, this class includes all carriers of 600 feet in length and upwards. These vessels are capable of carrying 12,000 to 15,000 tons of cargo. Well-known Canadian grain carriers of this class are the steamers *Donnacona* and the *Lemoyne*. The *Donnacona* measures 625 feet in length, 59 feet in width and her molded depth is 27.9 feet. In 1915 she carried a cargo of 760,066 bushels of oats; in 1919 a cargo of 504,908 bushels of wheat. The steamer *Lemoyne*, which was built in 1926, is 633 feet long, 70 feet wide and 29 feet deep. Her gross tonnage is 10,480 tons. During the season of 1928 she broke the record for volume of wheat carried three times. On June 16 she carried 534,000 bushels, on July 8 she carried 547,000 bushels. On August 27, both of these records were surpassed when 555,000 bushels were taken aboard, or 16,650 tons. The water draft of the vessel at the time of this sailing was as follows: fore, 19 feet 5 inches; aft, 20 feet 1 inch. On this occasion the cargo was carried to the Canadian government elevator at Port Colborne, where it was unloaded.

Finally in 1929, she carried a cargo of 571,796 bushels of wheat, or 17,153 tons.

Up to 1915 the largest total of wheat shipped on any one day from Fort William and Port Arthur occurred in December first that year. On that date 5,603,360 bushels were shipped out by vessel and 74,700 bushels by cars. The reason for this peak movement is that a large fleet of vessels was assembling during the two preceding days with orders to load after midnight of November 30 and not before. Consequently, vessels were placed in readiness at every elevator on the water front, and the Lake Shippers' Clearance Association had an abundant supply of grain ordered out. Grades were few, and the grain well distributed between the elevators, so that December first saw favourable conditions for a test of the elevators' loading capacities. The grand total stood as a record, although it was very closely approached on several occasions, particularly during the fall seasons of 1923 and 1927 when the quantities loaded day after day at the peak of the movement were very large, up to November, 1928. With substantial increases in shipping and storage capacity it was only a matter of time until the 1915 record would be eclipsed. On November 29, 1928, 6,344,808 bushels were shipped out by vessel, and 17,809 bushels by cars.

III. THE GEORGIAN BAY AND LOWER LAKE PORTS.

In Ontario between the head of navigation on Lake Superior and the Atlantic ocean ports there are 18 elevators with a total storage capacity of 49,850,000 bushels. These eastern elevators, with the exception of the new Dominion Government elevator at Prescott on the St. Lawrence river, are located at lower lake and Georgian Bay ports. They have three functions in the handling economy of western

grain. In the first place they act as transfer elevators, transferring shipments from the lake carriers to the railroads or to canal vessels. Secondly, they serve as a subsidiary storage pool to meet demands for grain at near points for shipments abroad. Finally, many of these eastern elevators engage in the business of storing grain for the domestic market provided in Ontario and Quebec. They hold supplies for the smaller flour mills and for dealers in coarse grain intended for feeding purposes. The west has been inclined to overlook this aspect of their business, and to regard them purely as transfer and storage elevators. The growing importance of this function is only now coming to be recognized.

The Georgian Bay and lower lake ports in Canada, having to face the competition of Buffalo and the other American ports, are able to draw only part of the grain traffic in their direction. Collingwood, though now surpassed by other ports, is the oldest of the Georgian Bay transfer ports, and its history antedates the movement of grain from western Canada. There have been elevators there since 1871. Owen Sound was the first Ontario port to be developed by the western Canadian grain trade. It became a grain port in 1886. Port McNicoll was created by the Canadian Pacific Railway in 1910-12. The capacity of the Port McNicoll elevator is 6,500,000 bushels. It was not until 1897 that the Grand Trunk Railway got well into the western grain business. Its elevators are now part of the Canadian National Railways' equipment for handling grain. The largest of these is at Tiffin near Midland. Goderich is an important point on the Canadian Pacific Railway. On the basis of handlings of Canadian grain for the crop year of 1928-29 the principal ports are Midland, Goderich, Port McNicoll, Depot Harbor, Sarnia and Owen Sound. In point of storage capacity Midland and Tiffin combined have the largest

amount, with 13,500,000 bushels. Toronto and Kingston have recently begun to make a bid for the transfer business. With the opening of the New Welland Canal they will be in a very favourable position. The new transfer house at Prescott will also have an important function.

There is always a movement to the Georgian Bay ports in the earlier part of the season of navigation in order to secure grain promptly at the port of Montreal for the ships which arrive there at that time. The exporters protect themselves via the Bay ports, in order to complete sales made for May and June seaboard, which might otherwise be held back, either through congestion at Port Colborne or by reason of the fact that the small carriers able to make transit of the canals may not be sufficient in number to bring the quantity of grain desired to Montreal for the earlier months of summer.

In the autumn, when the new crop is ready for shipment, all channels of transportation find employment because of the necessity of having an avenue through which to move grain to winter seaboard. In addition, grain moves through the lower lake ports to be ground to supply the domestic markets of eastern Canada, and to keep in employment mills which manufacture flour for export. For the crop year of 1928-29 it is estimated that grindings in the eastern division for home consumption amounted to 31,578,750 bushels of wheat, while the equivalent of 40,050,859 bushels were exported as flour.

But the heaviest movement of Canadian grain for the crop year of 1928-29 was to the port of Buffalo, which received from the Canadian head of navigation 168,230,750 bushels. Next in importance came the movement to Port Colborne at the head of the Welland Canal on Lake Erie with 71,689,546 bushels. The Canadian Georgian Bay and

lower lake ports received approximately 91,000,000 bushels. Four American ports, other than Buffalo, Erie, Fairport, Toledo and Cleveland, participated in the handling of Canadian grain to the extent of approximately 22,000,000 bushels. Direct shipments to Montreal amounted to 14,485,179 bushels. Quebec received 1,967,854 bushels. In addition 13,957,020 bushels of grain moved by rail from the Western Grain Inspection Division. Of this amount 2,379,229 bushels were consigned to Quebec for export, and 9,556,671 bushels went to the eastern domestic market. These figures give some idea of the various routes by which Canadian grain moves eastward. From the lower lake ports, rail shipments are made to the whole range of north Atlantic ports. Shipments to Port Colborne are transferred to canal boats and carried to Montreal, Sorel or Quebec. During the winter months a certain amount of grain is forwarded to St. John for ocean shipment. To a lesser degree, there are also consignments to Halifax and Portland.

During certain seasons, with a view to facilitating the movement of grain from the head of the lakes, vessels of American register have been permitted to carry grain from one Canadian port to another, or to load winter cargoes for delivery at Canadian ports. This concession is secured by the Dominion government passing an order-in-council, temporarily suspending the Canadian law governing coastwise shipping. During the fall of 1929, the Canadian vessel owners protested that the small crop of that year made such an action unnecessary, and for that reason the Board of Grain Commissioners did not recommend suspension of the coastal laws to the federal government. The same course was followed in the fall of 1930 and of 1931.

IV. THE PORT OF BUFFALO.

In point of fact Buffalo is the most important point of transfer and storage for Canadian grain between the head of the lakes and the Atlantic seaboard. For many years Buffalo has occupied this position. A huge volume of Canadian grain is shipped to Buffalo and is delivered to the railways for shipment at tidewater. Although a considerable amount of American grain passes through the Canadian transfer elevators and ocean ports, it has always been a sore point with the Canadian seaports that so much Canadian grain should move out via the United States. The circumstances which account for routing Canadian grain through American channels of export have been repeatedly investigated by the Canadian authorities. An examination of the facts discloses a combination of circumstances which up to the present have been of sufficient weight to enable Buffalo to hold the trade. Many exporters consider that Buffalo is the most strategic point for the distribution of grain to the various markets in Europe. Buffalo has five trunk railway lines to New York, two to Philadelphia, three to Baltimore, one to Norfolk, and two to Boston. It is also possible to tranship grain at Buffalo and send it down the St. Lawrence during the summer. The location of Buffalo has been likened to the segment of a circle, Buffalo itself being at the centre. If a line be drawn from Buffalo to Boston on the east, lines to New York, Philadelphia, Baltimore and Norfolk in the south, the advantages of having export grain at Buffalo will be apparent, for throughout the twelve months of the year the grain merchant has the opportunity of making his ocean contracts for space with competitive lines of steamers having regular regular services from these ports. More-

over, the range of these services is wider than at any Canadian port.

In addition to the regular steamer services there are also the tramp services. Tramp steamers on the American seaboard make their rendezvous principally at Hampton Roads, where they are sent for orders and bunkers. They are then in a position to serve North Atlantic American ports more readily than the Canadian ports of Montreal and Quebec. On this account they would rather take a lower rate of freight from the American ports than incur the expense involved in steaming from Hampton Roads to the St. Lawrence ports. There is thus a strong commercial reason why a large volume of Canadian grain should seek the port of Buffalo.

The excellent railway facilities between Buffalo and New York make it possible for the Buffalo elevators to supply grain to ocean steamers in less than thirty hours. As a marketing aid, there has recently been established by the New York Consolidated Grain and Produce Exchange, a futures market trading in bonded Canadian wheat in store at Buffalo.

When a new Canadian crop is ready for shipment, especially if it be a large one, the Canadian lake freighters as well as the American lake freighters not engaged in the ore trade, are fully employed in moving the crop from the head of the lake. Indeed it becomes necessary to use to the limit all the ports available, in order that the elevators at the head of navigation may be kept clear, and as much as possible of the crop be shipped east from Port Arthur and Fort William before the close of navigation. Traffic conditions in the Great Lakes, in the fall season, therefore, tend to cause grain to flow through the port of Buffalo.

Further, it is to be noted that the season of navigation

upon the Great Lakes is somewhat longer than that of the St. Lawrence River and the canals. Consequently grain continues to move to Buffalo after the river system of transportation has become closed. Moreover, a very large fleet of lake bottoms make their winter quarters at Buffalo. These vessels at the end of the season ship a cargo of grain for winter storage and serve as additional storage capacity at Buffalo during the winter months. For some seasons grain held in winter storage in lake vessels at Buffalo amount to over 20,000,000 bushels.

Finally, because of its advantageous position, Buffalo has built up a large flour milling industry. Canadian wheat is ground in bond for export as flour. A certain amount is also imported and ground for domestic consumption. Thus, apart from the traffic through the port, Buffalo itself is a market for Canadian wheat to the extent of 10,000,000 or 12,000,000 bushels annually.

V. THE ST. LAWRENCE ROUTE.

The water route to Montreal and Quebec has certain solid advantages over competing avenues of transportation which lead to its employment on a large scale. The costs of carriage are distinctly less than by other routes. This great advantage induces a steady flow of grain throughout the shipping season by water to the port of Montreal. Part of this flow consists of grain of American origin, and occurs somewhat earlier than the flow from the Canadian west. The lessened cost of transportation by water counterbalances the higher rates of freight demanded by the ocean tramp steamers on account of the northerly location of the St. Lawrence ports with the higher insurance rates thereto.

Some of the limitations of the St. Lawrence route have already been suggested, but in addition there has been the

important fact that the bulk freighters have been unable to make transit of the canals, and their cargoes had to be transhipped at Port Colborne, the entrance to the Welland. On certain occasions grain may be carried by water from the head of the lakes down the St. Lawrence, but this is an unimportant part of the volume of traffic and is the result of exceptional circumstances. The elevator facilities at Port Colborne consist of a government elevator operated by the Department of Railways and Canals with a capacity of 3,000,000 bushels, and the Maple Leaf Milling Company's elevator with a capacity of 1,500,000 bushels. The government elevator is purely concerned with transshipping; the second is primarily a milling proposition and does transshipping only as a side line. The grain handled by these two elevators for the crop year of 1929 amounted to 108,067,944 bushels; of this quantity nearly 30,000,000 bushels was grain from the United States.

The facilities could not cope expeditiously with all the grain offered for transfer. In the autumn when the flow is at its peak there was apt to be congestion. On various occasions there were serious tie-ups of vessels waiting to be unloaded. This worked a double disservice to the route. Shippers with commitments at the seaboard might be unable to fulfil their contracts and incur penalties; on the other hand the loss of several days at Port Colborne disturbed the schedule of the bulk freighters. Hence, shippers frequently route their shipments by the Bay ports to ensure delivery on the due date, and the rate quoted to Port Colborne is somewhat higher than it would be were despatch certain at the unloading point. Another handicap is the longer time required to move grain from the head of navigation by the less direct route.

The canal-sized vessels which take water-borne grain

from Buffalo and Port Colborne to Montreal, Sorel or Quebec, are limited in size by the locks in the St. Lawrence Canals to a length of 255 feet, a beam of 45 feet, and a draught of 14 feet. This gives a vessel with a maximum capacity of 90,000 bushels of wheat or 120,000 bushels of oats. Vessels of the average size will carry 60,000 bushels of wheat. Besides the steamers, a number of barges varying in capacity from 25,000 bushels to 40,000 bushels are employed. The Canadian coastal laws limit the boats operating between Port Colborne and Montreal to those of Canadian register, but grain from Buffalo may be carried in American bottoms.

The distance between Port Colborne and Montreal is 360 miles, and the canal boat carrier under favourable conditions makes a round trip in seven days. There are 47 locks between Montreal and Port Colborne, with lifts varying from three to 22 feet. The maximum capacity of the slowest lock is about 32 boats per day. This puts a limit upon the amount of grain it is possible to bring down the St. Lawrence at the height of the busy season. With perfect operation, and with all the traffic consisting of grain, the route has a total capacity of 2,000,000 bushels of grain per day. In recent years, however, the canal boats have suffered greatly from lack of dispatch in unloading at Montreal. The condition appears to be largely due to the elevator facilities at the port becoming plugged with stored grain. The average period of undue detention per canal vessel per trip, was calculated to amount to 44 hours in 1925, 92 hours in 1926, 38 hours in 1927 and 67 hours in 1928. The situation in 1929 was even worse, but the sluggish movement of wheat with prices "out of line" created exceptional conditions.

In recent years the grain traffic down the St. Lawrence has been increasing, reaching a peak in 1928. A new situa-

tion is about to be created by the completion of the new Welland Canal with a navigable depth of 25 feet. This will enable the large upper lake freighters to enter Lake Ontario and carry grain as far east as Prescott or Kingston. The tendency of this development, by slightly reducing transportation costs, will be to increase the flow of grain down the St. Lawrence at the expense of other channels of export. On the other hand, should the United States go upon a domestic basis for grain production, and cease to export grain, a substantial volume of traffic will be lost to the St. Lawrence route.

The opening of the new Welland Canal may be viewed as the completion of one stage in the development of the St. Lawrence deep-water route. But even if an agreement be consummated between the United States and Canada to build a deep water canal between Lake Ontario and Montreal, the present route will necessarily continue to carry the traffic during the period of construction. This would leave the route in its present form, including the new Welland Canal, to function up to approximately the year 1945.

VI. HANDLING GRAIN THROUGH THE EASTERN DIVISION.

The regulations controlling the handling of western grain from the terminals in the western division to the Atlantic seaboard, provide for two classes of shipment: those where the identity of the individual parcel of grain is preserved and the identical grain shipped from Fort William or Port Arthur is delivered at the seaboard terminal, and those where the shipper is satisfied with the delivery of grain of the identical grade shipped but not necessarily the identical grain which was loaded for him at the head of navigation.

The first class of shipments are commonly known as "I.P." shipments, that is, shipments with identity preserved.

To provide for shipments of this class, the Canada Grain Act enacts that the Board of Grain Commissioners may approve of written contracts for the leasing of special bin accommodation, in all such terminals and eastern elevators as may be necessary to ensure the preservation of western grain shipped through the eastern division in lots of not less than 16,000 bushels. Under the terms of this section of the Act, an exporter can accumulate grain in a special bin in a terminal elevator, and have it discharged into a vessel where it will be separately stowed. This grain can then be delivered to a specified eastern terminal where a special bin has been leased, and thence discharged to ocean carriers or shipped to eastern mills. The Act also provides that certain elevators owned by steamship companies may be relieved from the obligation to receive all grain without discrimination. These companies are therefore in a position to make special arrangements by which a shipper may have his grain handled as an "I.P." consignment. "I.P." shipments are used especially by milling and malting companies who wish to select their grain, and make certain that it is delivered to them without being mixed with other grain, even of the same grade. "I.P." shipments are also necessarily used for certain admixtures of grain, usually of a low quality, which are sold as sample lots without a Canadian certificate of grade.

The second class of shipment carries out the general idea of the Canadian method of handling grain in bulk, and merchandising it upon the basis of the official grade certificate placed upon it in the western grain division. The Act provides that the holder of any warehouse receipt for grain in a terminal elevator may have grain of the quality and grade therein described delivered to a vessel or railway car. It is also set forth that no western grain shall be discharged from

a terminal or eastern elevator in such a manner as to cause or permit the same to be mixed with grain of any grade with which the same might not have been mixed in such elevator. These provisions are designed to prevent grain being mixed in the carriers.

The vessels, however, upon receiving parcels of grain from an elevator may store together grain of the identical grade which belongs to different owners. The bills of lading will specify the quantity belonging to each owner. Normally, through the Lake Shippers' Association this grain will be delivered to the boat from one terminal elevator. Where separations in the hold of the vessel are necessary because of different grades or varieties of grain being carried, these are made by spreading heavy tarpaulins over the parcels of grain stowed below and placing the next consignment above it. Where, let us say, consignments of No. 2 Northern and No. 3 Northern wheat are to be stowed in the same hold with such a separation, it is practice to put the lower grade below, so that should any intermixture accidentally occur, wheat of the higher quality would mix with the lower.

When cargoes reach the eastern elevators, the statute states that "each lot or consignment of western grain received into any eastern elevator shall be binned in a separate bin apart from all other grain unless there is in such elevator no bin accommodation permitting such separate binning, in which case the lot or consignment may be binned with grain of the same grade." It will be observed that all this clause provides for with certainty is that grades shall not be mixed. In practice, during a considerable part of the season, the eastern elevators, being busy, take advantage of the proviso, and to conserve storage space bin grain of the same grade together. To ensure that the identity of a particular parcel

of grain is preserved throughout, it is necessary for the shipper to arrange for an "I.P." shipment.

The normal practice followed in handling Canadian grain passing through the United States in bond is to preserve the identity of such grain in cargo lots. Canadian grain may, however, be owned by traders who wish to have it mixed with American grain. But when this occurs, the shipment is inspected by American grain inspectors according to United States standards, and graded accordingly. The word "Canada" does not appear on the certificate, though in fact the grain may be chiefly of Canadian origin. Since there is a high duty on Canadian wheat on its entrance into the United States for domestic use, shipments in bond are very carefully watched by the United States department of customs to ensure that the quantities received in bond are actually exported. The chief guarantee to the exporter that parcels of Canadian grain passing through the United States have their identity preserved, lies in the fact that they are in the hands of transfer elevator companies and rail carriers who are merely interested in them as consignments of freight, and are not in the grain business themselves.

The general obligation imposed upon Canadian eastern elevator operators is to receive, without discrimination and in the order in which the same is offered, all grain of any grade for which there is available storage. But a section of the Act relieves elevators operated or controlled by steamship companies from this obligation. This enables steamship lines to protect their steamers against delay at unloading during busy seasons of the year. Further, the Board of Grain Commissioners are authorized to vary the terms of licenses issued to eastern elevators, to meet different situations for elevators catering to different classes of business at the eastern ports. Under this provision 12 eastern elevators have been able to

retain part of their storage space for private purposes. In certain cases the elevators are chiefly engaged in supplying mills with wheat, and require to store a supply to cover the winter period; in other instances the reservation is made for the purpose of handling a local feed business. As the Act requires that whenever the terms of the license of an eastern elevator is varied in this manner, the fact must be notified to every recognized grain exchange in Canada, the concession is safeguarded to protect the shipper, who in this way is given notice of the actual facilities available at each eastern port.

VII. THE ATLANTIC PORTS.

Although open for only seven months of the year, Montreal has been able to boast since 1921 of being the leading ocean grain port of the world. This position is not wholly due to the flow of Canadian grain. While the American ports of New York, Baltimore and Philadelphia play an important part in the movement of Canadian grain to foreign markets, this movement is balanced on the Canadian side of the line by shipments of American grain through Montreal. For the crop year of 1928-29, the shipments by vessel of American grain to the United Kingdom and other overseas countries by way of Montreal, amounted to 65,131,466 bushels. This grain moves from Chicago, Milwaukee and Duluth by the same routes employed in the carriage of Canadian grain. The American crop, however, comes to maturity somewhat earlier than does the Canadian. The last of the old crop and the beginning of the new have the advantage in moving out on the low rates that prevail before transportation becomes brisk in the autumn. When shipments of American grain are added to those from Canada, the total amount handled at Montreal greatly exceeds that

passing through any other North Atlantic port. In 1928, Montreal handled by water and rail 211,295,379 bushels. Taking the total amount of grain handled at Montreal and adding in grain equivalents, flour, meal and malt, we have the following figures, which give a comparison with the other North Atlantic ports: receipts, Montreal, 247,377,000 bushels; New York, 166,692,000 bushels; Baltimore, 36,343,000 bushels; Philadelphia, 25,284,000 bushels, and Boston, 14,430,000 bushels. Thus Montreal handled more than the four American ports together.

Behind the flow of grain to these ocean ports, lie all the circumstances which influence the routing of grain from the upper lakes to the seaboard. Each ocean terminal has its own peculiarities with respect to port management and commerce, which exert an effect. The port of New York can offer an extremely varied service by regular lines of freight and freight and passenger steamers to many parts of the world, and especially to Europe. No other American port on the Atlantic can compete with her in this respect. These steamers are always in the market for the carriage of a certain quantity of grain. Grain makes a desirable bottom-cargo to combine with other forms of better paying tonnage. Steamers make rates that will draw grain to this port for this purpose. But on the other hand New York is an expensive port for tramp steamers to enter, and the expense of conveying grain to New York is somewhat higher than by the all-water route to Montreal. Moreover, the port of New York does not excel in the facilities required to load grain cheaply. Much of the grain has to be carried in lighters to the ocean vessels, and transferred to the hold by floating elevators.

Normally, Montreal does not enjoy ocean rates as low as New York. Insurance rates are also higher into the St.

Lawrence. But on the other hand, Montreal is very well equipped to handle grain expeditiously and give despatch to ocean vessels. Her four great grain elevators have a total capacity of 15,162,000 bushels. At elevator No. 1, one of the largest seaport elevators in the world, grain can be received from lake vessels and barges at the rate of 40,000 bushels per hour; it can also be received from cars at the rate of 36 carloads per hour; while it can be delivering at the same time to ocean vessels at the rate of 75,000 bushels per hour. Elevator No. 2 is connected with No. 1, and can deliver grain over 15 miles of rubber belts to all the thirty steamship berths in the central section of the harbour, at the rate of 150,000 bushels per hour. Elevator No. 3 is equipped to handle the unloading of 28 cars per hour, and with four marine towers can also place two lake boats which can be unloaded simultaneously. Finally, elevator "B" has conveyor galleries to six shipping berths, capable of delivering grain to ships at the rate of 100,000 bushels per hour. Apart from these facilities, every effort is made to afford despatch. Low freight rates from the head of the lakes and despatch in handling grain outward give Montreal her commanding position as an ocean grain port.

The ports of Quebec, St. John, and Halifax on the Canadian seaboard have made strenuous efforts to participate in the handling of Canadian grain on its way to foreign markets. They have been jealous especially of the traffic enjoyed in this respect by the American ports. They maintain that the traffic should be kept within national boundaries. In 1927 the Dominion Government required a reduction in freight rates on grain from Port Arthur and Fort William to Québec by the Canadian National Railway, to the basis of rates made west of the lakes under the Crow's Nest Pass Railway agreement. This resulted in a rail rate

from the twin cities of 18.34 cents per 100 pounds, or in the case of wheat to 11 cents per bushel to Quebec. For the crop year of 1928-29, Quebec handled 15,528,062 bushels of grain. Receipts by rail, however, only amounted to 3,614,651 bushels.

The port of St. John is the winter port of the Canadian Pacific Railway, and in addition to the vessels of that company, eleven steamship lines, chiefly freight carriers, maintain regular sailings. For the crop year of 1928-29, St. John handled 30,970,519 bushels of grain. This included a movement of American grain amounting to 17,501,570 bushels. St. John's chief rival during the winter season in the past has been Portland, Maine, but in recent years shipments of Canadian grain through this port have declined. Although the port of Halifax has been provided with commodious facilities, up to the present the export of Canadian grain by this route has proven negligible. ¶

VIII. FREIGHT AND HANDLING CHARGES.

In computing the cost of moving grain to the seaboard from Fort William and Port Arthur, the principal item to consider is that of freight. This item breaks up into the cost of carriage down the lakes, and the cost of movement either by canal boat from Port Colborne to Montreal, or by rail from Buffalo or other ports on the lower lakes to the ocean terminal selected. Although some of the smaller vessels proceed from Montreal to the head of Lake Superior for a grain cargo, they are so few in number, and their trips are so infrequent, that they constitute no material factor. To the item for freight there must be added various other charges; handling at the transfer points, brokerage, insurance and outturn insurance.

~~A~~ fundamental difference between lake rates and rail

rates is that the latter are approved of by regulative bodies in both the United States and Canada. They are relatively stable, and they are non-discriminative, in that between two points under similar conditions the same rates prevail for all shippers. But with lake rates, the rates charged are reached by a process of bargaining between the individual shipper and the carrier. In each case there is a separate contract, so that the rate varies according to the amount of space demanded, the terminal point designated, the season of the year when carriage is desired, and, in general, the amount of grain offering for carriage in relationship to the bottoms available; all these play a part in influencing the terms of the contract. It follows that it is open to the lake freighter to carry in the same vessel on the same date, and between the same points of origin and destination, shipments of wheat of the same quality at different rates per bushel. One lot of wheat may be paying three cents and another lot four cents per bushel. The individual bargain accounts for the rate.

Contracts for grain carriage may be for tonnage as distinct from space. Actually about 50 per cent of the shipments from Fort William and Port Arthur are straight cargoes for one shipper. Space shipments vary and may be as low as 4,000 bushels, but lots of 25,000 and of 50,000 bushels are common. From the nature of the business, contracts for space or tonnage are usually written a considerable time in advance. In some instances, contracts for cargoes are made as early as November for the opening of navigation in the spring. On the other hand, after the opening of navigation when trade slackens, until about the middle of September, tonnage available for grain shipments in a few days or within a short period can usually be procured easily. But from mid-September until the close of navigation tonnage is much

more difficult to find, and between these dates the grain is moving chiefly in tonnage that has been reserved in advance. Reserving tonnage in advance means that the shippers have to estimate their requirements and the probable state of the market. Further, they must weigh the advantages of the various routes available. Freight rates on the Great Lakes are thus one of the most speculative factors in the export of grain. In general, the business is carried on by individuals purchasing space or tonnage in advance of purchasing grain. This method, however, does not prevail with certain large operators who handle grain all the way from the country shipping points to the foreign market. They may make special arrangements with shipping companies, undertaking to provide a monthly minimum of shipment during a specified period, such as the first half of September until the first half of November.

In 1929, the average rates for the month of October to Georgian Bay ports was 1.97 cents per bushel, compared with 2.97 cents per bushel in 1928; to Port Colborne, 2.61 cents per bushel; to Buffalo, 2.05 cents per bushel, and from the head of the lakes direct through by water to Montreal, 7.86 cents per bushel. In 1928, the lowest rates of the season were reported for the months of June and July, when the average rates to the lower lake ports ranged from 1.61 cents to the Bay ports, to 2.40 cents per bushel to Port Colborne.

The business of arranging charters or space is handled by vessel agents or brokers, who have offices at Winnipeg and are members of the Exchange. The vessel agent is a necessary link in the trade, providing the desired space for the shipper, and securing cargoes for the vessel owner, and at the same time keeping both parties informed with regard to conditions at the different lake ports. Prior to 1923, the ship agent, as a rule, was only paid for his services indirectly.

In his contract with the shipping company, the agent agreed that no claims would lie against the carrier or any individual vessel for services or disbursements, but in lieu thereof he should have the placing of marine insurance on all grain carried, and should have the right to make the placing of such insurance for the shipper a term with the proposed shipper in arranging any charter party for the carrier. The carrier reserved the right to make direct charter party with any shipper, but in such event it was provided that the marine insurance on the cargo should be placed through the broker, who was entitled to the full commission. This practice aroused strong objections among the shippers, who claimed that it led to an excessive marine insurance rate. The practice was prohibited by law after 1923. At the present time the broker's commission is regulated by a by-law of the Winnipeg Grain Exchange. The vessel broker is allowed a chartering fee by the shipper of $\frac{1}{8}$ of a cent per bushel. The grain shippers now write their marine insurance direct with the companies. Cargo insurance rates for the season of 1929 to Georgian Bay ports, were $10\frac{1}{4}$ cents per \$100 up to October 31. They were advanced rapidly, until between December 9 and 12 the rate was 75 cents per \$100. Cargo insurance is not written after December 12.

In addition to cargo insurance, outturn insurance is placed upon the cargo to protect the shipper against loss by grain shortage when the cargo is delivered at an eastern elevator. Before 1919 there existed a mutual arrangement whereby the vessel, the loading, and the unloading elevators divided the loss on grain shortage. Ultimately the loading elevator refused to share the loss, on the ground that it had delivered the exact quantity of grain called for by the bill of lading. On the other hand, the receiving elevator declined to be accountable for the cargo beyond the weight registered

as received by its scales. Outturn insurance was resorted to by the shippers as a form of compromise. The shippers, on their part, while disclaiming any responsibility for the shortage, agreed to contribute one-quarter of a bushel in value for each 1,000 bushels loaded. The rates for outturn insurance for the season of 1929 were $2\frac{1}{2}$ cents per \$100 to Buffalo, Port Colborne, Goderich and the Bay ports and 5 cents per \$100 to Montreal or Quebec.

While parliament has regulated strictly the rates for railway carriage, it has relied upon competition to maintain rates at a reasonable level upon the Great Lakes. Consolidations of shipping companies and interlocking directorates, however, have reduced the amount of competition to a certain extent. In 1922 the shippers complained to the federal government that a steamship combine existed, composed of the Canadian companies operating upon Lakes Superior, Huron and Erie. It was alleged that this combine was levying an excessively high and unjustifiable freight rate upon grain and for insurance, and was discriminating against Canadian ports in favour of the Port of Buffalo. The government appointed a royal commission of inquiry, which reported that a virtual monopoly existed during the season of 1922 among the vessel operators, who had a tacit understanding upon the rates to be fixed. The rates to Canadian ports were found to be high and unjustifiable. The commission recommended that lake freight rates should be placed under the jurisdiction of a regulative body, with power to approve or disapprove of maximum rates.

The report was followed by the enactment of the Inland Water Freight Rates Act of 1923. This measure provided that shipping companies should file with the Board of Grain Commissioners a tariff of rates to be charged for the carriage of grain. When the rates proposed appeared excessive or

unjustly discriminative in the opinion of the Board, it could prescribe such rates as it deemed reasonable. To guard against discrimination in the allotment of space, the vessel broker was to post up before 10 a.m. daily in the Winnipeg Grain Exchange, a statement showing in detail the cargo space, the time for shipment, and the destination for charters he had placed the preceding day.

This act, which was intended to regulate the shipping rates for grain, proved altogether unworkable in its main features, and it was drastically amended in 1924. The requirement to post details of charterings and of filing tariffs or rates was repealed. Instead, a copy of all charter parties or space contracts had to be filed with the Board of Grain Commissioners before the grain was laden. While the act failed in its main intent, the regulation of grain rates on the Great Lakes, the amended regulation gives the Board of Grain Commissioners an opportunity to survey rate charges and to report to the Government any indication of monopoly.

In contrast to the freight rates on the Great Lakes, which vary from day to day, the railway tariffs are relatively stable, but they are built up with a nice adjustment to the competitive strength of the different ports and rail carriers. The rates from Buffalo to New York on wheat for export is 9.1 cents per bushel. From Buffalo to Philadelphia and Baltimore the rate is 8.8 cents per bushel. To meet these rates on wheat, the Canadian lines make a rate of 8.6 cents per bushel from the lower lake and Bay ports to Montreal.¹ In competition with these routes is the all-water route from Port Colborne. The average rate by water from Port Colborne to Montreal for October of 1928 was 6.13 cents per bushel, plus cargo and outturn insurance, which would bring the total cost to approximately 6½ cents per bushel.

¹In July of 1931 a cut initiated by U. S. railway lines reduced these rates by 3 cents per 100 pounds.

By bringing together the various items of costs noted above, and adding a charge of three-quarters of a cent per bushel for the services of the transfer houses at the lower lake ports, it is possible to give a general idea of the cost of moving wheat from Fort William and Port Arthur to the ocean terminals. The figures can claim an approach to accuracy only for the season on which they are based, that of the month of October of 1928, but they exhibit the general relationships between the routes. On shipments of wheat moving to Montreal for export by the Georgian Bay ports, the charges amounted approximately to 13 cents per bushel; on shipments by Buffalo to New York, to 13.2 cents per bushel, and by all-water route to Montreal, with transfer of the cargo from the lake carrier at Port Colborne, to 10.77 cents per bushel. Lake rates in 1929 fell sharply due to lack of volume of business offering. As we have already noted, the rates vary with the different months of the year, and from route to route according to the rates on lake shipping to the various ports. The advantage of being able to move grain from the lake head to the ocean port in shorter time by lake and rail, overcomes in some measure the cheaper rates afforded by water carriage.

Ocean rates upon grain show great variations from day to day and from port to port. The scale of port dues, the costs and facilities for unloading, and differences in distances, all play a part in determining the rate. Thus in October of 1928 the rate per bushel on wheat from Montreal to Liverpool showed a range of from 6.7 to 8.2 cents per bushel, while the rate to London for the same period lay between 7.5 and 10.5 cents per bushel. Rates to Rotterdam were 13 to 14 cents per bushel, and to Hamburg 13 to 16 cents. Rates from New York to Liverpool reported for the fifteenth day of the month of October, were 6 cents per bushel to

Liverpool, and to Manchester 6.7 cents per bushel. The St. John rate to the United Kingdom for January of 1929 was 9 cents per bushel, falling to 7 cents in February, and rising again to 9 cents per bushel in March. The tonnage market is a very intricate business, and brings into play a variety of considerations that quite escape the layman. One result of the lack of shipments and the general condition of trade since 1928 has been a fall in the rate on ocean tonnage.

It is difficult to state definitely the present cost of shipping Canadian grain from the head of navigation on Lake Superior to the United Kingdom or the continent. The best that can be done is to set down an approximate figure to include freights and insurance, and a charge for the use of ocean terminals which is made at some ports. It must be remembered also, that the rate varies with the season of the year. For October of 1928, when the rates are higher than in the summer, the cost of moving Canadian grain from Fort William and Port Arthur to the United Kingdom was from 19 to 21 cents per bushel. For the season of 1930 under conditions of depression, E. A. Ursell, statistician to the Board of Grain Commissioners, has estimated the lake freight rate from Port Arthur or Fort William to Montreal including trimming charges, outturn insurance and transfer charges at Port Colborne, at $8\frac{1}{2}$ cents per bushel of wheat. To this he adds one cent per bushel to cover the elevation of grain from the canal vessel at Montreal, weighing, storing and insurance against loss by fire or explosion, brokers' fees, and loading into ocean steamer. He finds the approximate average cost of freight and insurance from Montreal to Liverpool to be $4\frac{1}{2}$ cents per bushel. This gives an average cost of moving wheat through Montreal from western Canada to the United Kingdom during the season of 1930, of 14 cents per bushel.

For the same season, the cost of receiving at the country elevator, weighing, elevating, spouting, insurance against loss by fire and storage for 15 days, loading into cars for shipment, cost of inspection and weighing, registration fees and selling to exporters on the Winnipeg market, was placed at five cents per bushel. The freight rate from an average western point to Fort William was calculated to be $13\frac{1}{2}$ cents per bushel, and terminal charges were put at two cents per bushel. This would give a total of $20\frac{1}{2}$ cents per bushel, and would make the approximate average charges for the season of 1930 to the producer in western Canada for placing his wheat at Liverpool, $34\frac{1}{2}$ cents per bushel.

CHAPTER X

THE PACIFIC ROUTE

THE construction of the Panama Canal caused far-reaching changes in the flow of ocean traffic. One of these changes has been the development of shipments of Canadian grain destined for consumption in Europe through the ocean ports of British Columbia. As a result of the opening of the Panama Canal, the farmers of the province of Alberta particularly enjoy the advantage of an alternative route for their exports. A large and increasing share of Canadian grain destined for Europe now moves out by the Pacific and the Panama.

I. THE PORT OF VANCOUVER.

The port of Vancouver has grown rapidly as an ocean grain terminal. The combination of shipments to Europe and to the Orient give it a volume of traffic in good years second on this continent only to Montreal and New York. With respect to shipments of purely Canadian grain, Vancouver has been able on occasion to exceed Montreal. The grain traffic at Vancouver has developed with marvellous rapidity, a factor in this progress being the exceptionally large crops that the transportation systems east and west have been called upon to handle. For the crop year of 1925-26, total shipments from British Columbia ports were 53,453,108 bushels. Of this amount 25,267,248 bushels were billed to the United Kingdom. For the crop year of 1928-29

the shipments from the port of Vancouver exceeded all previous records. Total exports of wheat amounted to 94,998,441 bushels, of which 31,868,187 bushels went by the Panama to the United Kingdom. About the same quantity found a market in the Orient, and the balance was sold to other countries.

Although the Panama Canal was opened for traffic in 1914, eight years elapsed before Vancouver was recognized definitely to be an important outlet for export grain. While the canal was under construction, divergent views were expressed with respect to its possibilities. On the one hand there existed a lively hope in Vancouver shipping circles, and among the farmers of Alberta, that the low costs of ocean transport, combined with a short rail haul to tidewater, would make the route feasible for the shipment of grain to Europe. On the other hand the whole organization of the grain trade was centred around shipment by the eastern route. All the technical conditions of export by the Atlantic ports were well known to the exporters. Large investments dedicated to the movement of grain east had been made at Fort William and Port Arthur and at other points. Thus, to the natural disinclination to shift from accustomed channels of export to a new and untried route, there were added pecuniary inducements to maintain existing conditions.

A somewhat similar situation influenced the railways. The carriage of grain eastward to the terminals provided a long haul compared with that afforded by carriage to Pacific ports. Hence grain shipped westward would entail a certain sacrifice in revenue to the railways. There was, therefore, no real economic motive to induce the railways to attempt to develop a grain traffic to the Pacific. Finally, apart from these considerations, there existed a genuine doubt whether Canadian grain could be shipped safely in

bulk by a tropical route without being seriously injured while in transit.

When the Canal was opened in 1914 the European war delayed a practical test of the possibilities of the route. However, responding to pressure from the city of Vancouver, the Dominion Government had agreed somewhat earlier to erect a terminal elevator on the harbour front. This elevator was constructed with a capacity of 1,250,000 bushels, and was completed in 1916. In the autumn of the next year, as a result of the vigorous efforts of the Vancouver Board of Trade, it was decided to make a test of the route. The steamer, *War Viceroy*, an American freighter, was chartered, and an experimental shipment of 100,000 bushels was collected in Alberta and forwarded to Vancouver. The greatest of care was taken in loading the cargo. Supervision was exercised by the staff of the Dominion Grain Research Laboratory, and an official accompanied the shipment to the United Kingdom. Special thermometers with electrical connections were placed in the hold, by which changes in temperature in the grain would be indicated and could be read from the deck. The cargo stood the voyage with practically no loss from deterioration. It was unloaded at London, and only 160 bushels were reported damaged.

But although this test disposed of the notion that wheat shipped in bulk would suffer damage in passing through the Panama Canal, the route stood practically at a standstill for the next five years. Total shipments from Vancouver for the year of 1916 amounted to 117,355 bushels; in 1917 to 259,633 bushels; in 1918, 1,111,138 bushels; in 1919 to 329,214; in 1920, to 590,847 bushels. These small shipments went mainly to the Orient, and threw no light upon the commercial possibilities of the route for shipments to Europe. During 1916 and 1917, traffic through the Panama Canal was inter-

rupted by earth slides, but the chief reason for the sluggish development of the route was that a condition of high ocean rates prevailed around the close of the war. High ocean rates do not favour the Panama route to Europe. The sea voyage from Vancouver to Europe is approximately 10,000 miles; the sea voyage by the Atlantic is approximately 3,250. Another factor delaying development, was that the level of railway rates from prairie points to Pacific ports was higher than that governing shipments to Fort William and Port Arthur under the Crows' Nest Railway agreement. This disability did not appear until 1925. The 1921 shipping rates were dropping, and there were shipments of 1,251,071 bushels. In 1922 rates were favourable, and shipments from Vancouver reached a volume that indicated permanency in the traffic. Total export; reached the figure of 14,463,883 bushels, and of this amount 10,783,728 bushels were shipped to the United Kingdom. Since 1922, the traffic has steadily increased until it has reached its present dimensions.

As a grain terminal, the port of Vancouver combines the functions divided between Montreal and Fort William on the eastern route. Grain is shipped directly from country points in Alberta and western Saskatchewan to the Pacific coast. In the condition in which much of it arrives, it is not ready for export. As a result, one phase of the work of the Vancouver terminal elevators is that of cleaning and drying grain where this is required. At first it was proposed that the handling of grain at Vancouver should be limited to publicly owned terminals, but this idea has not been sustained and there have been located at the port a number of privately owned elevators, where grain is not only cleaned or dried if necessary, but is also, where permitted, mixed. Semi-public elevators have become an important part of the

elevator capacity of the port. Thus the Vancouver terminal is not merely the gateway through which grain moves to the foreign market, but also a centre where grain is put into condition to receive a final certificate of grade from the inspection department for export.

It is due to these reasons that we do not find the physical handling of grain to be concentrated in elevators under the Board of Harbour Commissioners as at Montreal. At Montreal, with the possible exception of certain lower grades of amber durum wheat, grain reaches the port fully graded for export. It is binned separately according to grade, and shipped out on the certificate of grade received in the west. Thus, the Montreal Board of Harbour Commissioners, in operating the harbour elevators, is chiefly concerned with volume of movement and making the most expeditious use of the facilities. At Vancouver, to this interest must be added that of gleaning the profits to be had from cleaning, drying, and mixing. Several of the largest elevators are owned by private concerns, and the elevators owned by the Board of Harbour Commissioners are leased to private companies. There is only one elevator operated at Vancouver under the rules governing a public terminal elevator. In all these respects the port resembles in its business activity the conditions at the head of navigation on Lake Superior, rather than at Montreal.

The actual design of the larger Vancouver elevators conforms to that associated with ocean ports. The large elevators at Fort William and Port Arthur are built right on the harbour front, and it is possible to load the lake vessels by direct spouting of grain into the hold. But at Vancouver the foreshore of the harbour is required for package freight. As a result most of the elevators are built back, and grain

is conveyed to the ocean vessels by belt conveyors carried over galleries.

In view of the limited storage capacity of the port, a system of shipping under permit has been devised by the railways, with a view to preventing a blockade at the port, and on the railway lines delivering grain. Under this system farmers are not permitted to ship freely on their own initiative to Vancouver with the intention of placing their grain in store at that point for future sale. The initiation of shipments rests with the buyers. The latter know their commitments for delivery to vessels, and on their advice the railways make out a permit to cover shipments to the coast. To actually secure the grain the exporter commonly offers a premium to the farmer over the price based on Fort William delivery. In the case of the pool and certain private grain companies, which have their own elevator terminals at Vancouver, the grain moves forward at their request for delivery to their own houses.

Besides the lack of storage capacity at Vancouver, another strong reason for the permit system arises from the absence of a large local market capable of absorbing supplies of wheat shipped to the coast that do not find an export outlet. Undoubtedly the development of semi-public houses capable of mixing the lower grades of wheat and grain will provide to some extent a market for off-grades of grain sent to the coast. But this development has not been sufficient to warrant the free shipment of all grades to Vancouver.

When Vancouver first put forward claims to a share in the Canadian grain trade, it was feared that there would be an insufficient supply of shipping to build up a trade of large volume. This has not proven to be the case. Grain was first carried from Vancouver chiefly in parcel shipments.

As such, it provided an excellent bottom cargo for the regular-liner services connected with the port. But as the volume of grain offering for shipment increased tramp steamers, attracted by the cargoes available, were drawn to Vancouver. The steamers came from various points. Although the voyage from the United Kingdom occupies approximately 35 days, tramp vessels have been known to come out in ballast for a cargo of wheat. Undoubtedly, in so far as Vancouver can increase her inbound tonnage of cargoes, the freight rates outward will be easier, but the converse holds equally true, and the flow of grain outward has been a general factor of immense importance in developing the port.

Under present conditions, ocean rates on grain from Vancouver are such that the Pacific route has become a formidable competitor to the eastern channels of export, especially for grain grown in Alberta and the western portion of Saskatchewan. The ocean rates on wheat from Vancouver to the United Kingdom and the continent during 1928 displayed a range of from 16.0 cents per bushel in May to 22.8 cents per bushel in November. Cargo insurance rates were 35 cents per \$100. The figure for freight may be compared with the rates from Fort William to Liverpool. A comparison of rates from month to month between the east and west routes is of little significance, since the importance of Vancouver as a grain outlet for shipments to Europe lies especially in the fact that from the middle of December until late in April the Great Lakes are closed to traffic. During this period the port of Vancouver is especially busy, and is in a position to supply the European market with Canadian grain drawn direct from interior points. Indeed the influence of the flow of grain via the Pacific has extended back to the cities of Calgary and Edmonton, where additional storage capacity has developed which can be used for grain capable

of being finally shipped either by the Pacific or by the Atlantic.

Moreover, railway rates from a considerable number of shipping stations in Alberta are less to Vancouver than to Fort William. The rate on wheat from Calgary and Edmonton to Vancouver, is 12 cents per bushel compared with 15.6 cents per bushel to Fort William. This advantage in freight rates decreases progressively on stations located farther east, but the effect of the present situation at current rail and ocean freight rate levels is to send a large volume of grain westward to the Pacific for shipment to Europe. So keen is the competition between grain exports that a calculable difference in shipping costs of one-eighth of a cent per bushel on the handling of grain from the producer to the trans-Atlantic buyer will deflect shipments from the Atlantic to the Pacific coast. On a shipment of 100,000 bushels, a very moderate consignment, one-eighth of a cent per bushel would amount to \$125.

The export of grain is carried on with a very narrow margin of profit to the grain merchant, and on his ability to deliver his grain at the foreign port at the lowest cost of shipment, depends to a large degree the amount of his net returns. The Pacific route has introduced a new factor into the situation with respect to Canada. The volume of grain making use of the route will depend primarily of course on the production of grain in Alberta and western Saskatchewan, but secondarily on all the costs of shipment and handling from the farmer's initial shipping point to the foreign port. An increase in ocean freight rates, high charges at Vancouver, a reduction in eastern carriage rates due to the opening of the new Welland canal, are factors that would tend to diminish the flow westward. Conversely, lower ocean rates, decreased port charges, an increased flow of

traffic inward to Vancouver, would work positively in favour of the route.

Undoubtedly, the greatest single advantage that has come from the development of the Pacific route, has been the element of competition introduced into the carriage of grain from the grain growing region to tidewater. The two routes are in competition. Some years ago, as we have seen, the Canadian Government had to deal with a combination intended to raise grain carriage rates on the Great Lakes. Today, increased costs of shipment by the eastern route imposes its own penalty upon the carrier in an enhanced flow to the Pacific.

II. SHIPMENTS TO THE ORIENT.

Apart from being able to compete with the eastern route for shipments to Europe, Vancouver pins her faith of becoming a great grain port on developing a trade with Japan and China. Exports to Japan have grown steadily since 1921-22, when shipments amounted to 3,516,401 bushels. For the year of 1923-24, the amount sent to Japan doubled, and in 1925-26 a high point of 12,927,933 bushels was reached. Again, for the crop year of 1928-29, Japan imported 22,700,487 bushels. There are, however, wide fluctuations in the amount shipped from year to year. The amount that Japan will absorb depends chiefly upon the local rice crop; when this is large, wheat imports show a decline, and vice-versa. Nevertheless, increasing population in Japan makes the market a growing one; Canadian wheat seems to have secured a firm foothold, and Vancouver is the port which handles the traffic.

The demand for wheat in China seems to be even less steady than in Japan, although over a period of years a good bit of Canadian wheat finds its way there. Just as in Japan,

the local supply of wheat and rice is a decisive factor in the situation. In addition, the low price of silver and the unsettled condition of affairs in China for the past few years have added to the irregularity of trade. The following exports to China are reported for the last seven crop years: 1922-3, 804,230 bushels; 1923-4, 7,569,929 bushels; 1924-5, 33,366 bushels; 1925-6, 7,689,834 bushels; 1926-7, 3,942,860 bushels; 1927-8, 1,262,687 bushels; and 1928-9, 9,131,370 bushels. The policy of Japan is to grind wheat purchased abroad, and flour shipments are relatively small; but with China, large shipments of flour occur, and these must be taken into consideration when discussing the oriental market for Canadian wheat. Flour shipments to China show the same fluctuations from year to year that appear in wheat. In 1927-8 shipments of flour totalled 798,991 barrels; for 1928-9 they were 3,040,667 barrels. On the whole, the grain and flour trade to the far east is an "in and out" trade. In some years large exports can be secured, but this may be followed by a year of very little trade. For the crop year 1928-29, ocean rates on wheat from Vancouver to Yokahama ranged from nine to 12.7 cents per bushel, to Shanghai, from 10.5 to 15.7 cents per bushel.

Some shipments have been made from Vancouver to the west coast of South America, but up to the present these are of very small volume. The chief market entered is Peru, but the average shipments of wheat to Peru are less than 500,000 bushels. Mexico also draws some supplies from Canada via Vancouver.

III. NEW WESTMINSTER AND VICTORIA.

In addition to Vancouver, other ports on the Pacific coast have made a bid for a share of the grain traffic. These ports are New Westminster and Port Mann on the Fraser River,

Victoria, and Prince Rupert. The Fraser river ports are well located to engage in the grain trade. The Fraser river is by far the greatest highway in British Columbia for fresh water shipping. With a limiting depth of 29 feet at minimum high tide, a substantial export trade in lumber has been built up. Ocean boats of a size well suited to the grain trade enter the river each year in considerable numbers. As a fresh water port, New Westminster is favourably regarded by vessel owners, since a few days in fresh water will kill marine growths on the hulls of vessels. Insurance rates are the same for the Fraser river ports as for Vancouver. With low port dues and excellent sites for elevators, New Westminster believes that it should attract part of the grain traffic to the city. Up to the present, however, there is but one small terminal at New Westminster; the grain trade has gone by to centre at Vancouver. Undoubtedly one reason why more elevators have not been built at New Westminster, is that the port does not have an extensive liner traffic, and consequently an elevator would have to rely almost entirely upon cargo shipments. Part cargoes are difficult to arrange, especially if the same boat must obtain the balance of its load at Vancouver. Grain terminals at New Westminster or Port Mann have to pioneer, and private interests are unwilling to make the venture in the face of the opportunities for trade offered by building at Vancouver.

The port of Victoria has also put forward claims to be regarded as a grain terminal. The city enjoys the same rail export rates as those accorded to Vancouver, and it offers considerable return freight in the form of lumber to the railways. It is a port of call for vessels to the Orient, and has excellent harbour facilities. In 1928, it managed to secure the erection of a grain elevator on the harbour front. At best, Victoria is a rather out-of-the-way port for grain

intended for Europe, and the difficulties of building up a trade are increased by the fact that Victoria has not unbroken rail connections with the grain growing region. In order to reach the grain terminal, the loaded grain cars have to be ferried across the main land. This slow and cumbersome method of transportation precludes the notion that Victoria could ever become an important grain port. The superior position of Vancouver with its much larger volume of shipping stands in the way of Victoria. Moreover, the grain trade benefits by concentrating its activities about a single port. The facilities for receiving, inspecting and loading grain in ocean vessels works in with the general traffic of one port better than where various exporters have shipments in storage at different ports. Vancouver has gradually built up the traffic, and as it increases it naturally gravitates to that terminal.

IV. PRINCE RUPERT.

Prince Rupert was chosen as the western terminal of the Grand Trunk Pacific Railway, and is the most northerly port on the Pacific Coast for the export of Canadian grain. Prince Rupert is 500 miles north of Vancouver by the inland passage, but by trade route to the Panama the additional length of voyage to the entrance of the canal is approximately 280 miles. Since this additional mileage is a very small percentage of the total distance to Europe, it should not constitute an insuperable obstacle to shipments there. Although the port is north of the fifty-fourth degree of latitude, it is approached from the ocean by a much less intricate and dangerous channel than is Vancouver, and is given the same rate of insurance for vessels. Vessels may enter Prince Rupert without the payment of an additional premium. Pilotage and harbour dues are relatively low, due to the

natural excellence of the harbour, and its convenience of access to ocean vessels. Vessels from the north Pacific range of ports proceeding to the Orient, following the great circle, steam north of Prince Rupert, and the latter port has an advantage in distance to the far east over Vancouver of approximately 480 miles. Prince Rupert is 960 miles west of Edmonton, or 186 miles further from the grain growing region than Vancouver. The Canadian National Railways, however, maintains a parity of freight rates with Vancouver on grain moving to Prince Rupert for export.

When the railway was constructed to Prince Rupert, it was believed that it would eventually prove to be an important outlet for grain. The late Charles M. Hays, then president of the railway, is credited with the statement that he expected to see the time when 100,000,000 bushels of wheat would move annually through Prince Rupert. In 1925 a terminal elevator was erected by the Dominion Government. This elevator was subsequently leased to the Alberta Wheat Pool. The Wheat Pool has made use of the port chiefly when the pressure of shipments through Vancouver has delayed movement, and made the time of delivery to vessels uncertain. When a blockade has occurred through Vancouver, by using the port of Prince Rupert the pool has been able to fulfil its contracts. The largest amount to pass through Prince Rupert elevator occurred in the crop year of 1927-8, when shipments totalled 7,581,589 bushels. Of this quantity, shipments to the United Kingdom accounted for 3,916,089 bushels, and 3,665,500 bushels were dispatched to other overseas countries.

Up to the present, Prince Rupert has not been able to secure a parity of ocean freight rates with Vancouver, although a cheaper port for vessels to enter. The vessel owners maintain an ocean differential of one-half cent per

bushel in favour of Vancouver. This differential, along with the fact that it is impossible to make part shipments through Prince Rupert due to the absence of other kinds of freight, are the chief reasons why there has not been a larger development of the grain trade through this port. This may be illustrated by the conditions which govern the route of grain shipments to Japan. Japanese vessels carrying grain to Japan characteristically carry above the cargo of grain a deck load of lumber. This lumber is available at Vancouver, and they prefer therefore to get their grain at the same port.

Prince Rupert is keenly interested in the construction of a western outlet for the Peace River district and considers that it should be the logical port to serve that territory. Unquestionably it is only a matter of time until the Peace River country will secure a western outlet, and certain of the various routes suggested would swing the traffic through Prince Rupert. If the outlet should be by Prince Rupert, there is no doubt that there would be a rapid expansion in the grain traffic through the port. With the development of facilities and of traffic from this cause, it is likely that Prince Rupert would then be able to attract a larger volume of shipments from central Alberta and Saskatchewan through Edmonton. On the other hand, the port of Vancouver is also interested in the Peace River country, and hopes that the route finally determined upon will make it possible to hold that region tributary to it. Without the Peace River country, Prince Rupert is not likely to become an important grain port.

CHAPTER XI

THE WINNIPEG GRAIN EXCHANGE

THE Winnipeg Grain Exchange occupies an unique position in the grain trade of Canada. Whereas, in the United States there are several large organized markets which compete against each other for business, in Canada the Winnipeg Grain Exchange has no serious competitors. It has become the largest cash grain market in the world. It is the only real grain futures market in Canada for grain, and the magnitude of its operations in this sphere makes it possible for world traders to avail themselves of its trading floor for hedging transactions in distant markets. The situation of the Exchange is the centre of a compact group of buildings where all the interrelated interests that play a part in the marketing of Canadian grain have either their headquarters or at least an important branch.

The Exchange owes its dominating position chiefly to certain simple facts in the history of the west. Before agricultural development took place the old trading post of Fort Garry had been located at the junction of the Red and the Assiniboine rivers. On this site grew the city of Winnipeg, and from its very beginning it has been the gateway to the west. The first grain to be exported moved out by water from Winnipeg. When railway connections were established to the east, Winnipeg was the most important terminal point through which the main line passed, and from which branch lines radiated. When grain moved eastward to the head of navigation, it necessarily passed through Winnipeg.

As the first city in the Canadian west, Winnipeg was selected as the banking and financial centre from which the larger interests in the east directed their western business. Ample supplies of credit are important to the grain trade, and these were at hand. Thus, although located on the eastern edge of the grain growing region, Winnipeg could most conveniently serve all the needs of those dealing in grain. The organization of a market followed, and its development has kept pace with the expansion of the Canadian west.

In one respect the Winnipeg market differs from other large grain markets. The delivery of wheat on sales made in the Exchange occurs, unless specially provided otherwise, at Fort William and Port Arthur. The terminal warehouses where the wheat bought and sold in the Exchange is stored, are located at the lake head, over 400 miles distant from the market itself. This has not, however, proved a disadvantage, since, under the Canadian system of bulk handling on the basis of official grades, it is desirable that knowledge of the grade should be secured if possible before the grain is unloaded and binned at a terminal. Sampling the cars and setting a tentative grade at Winnipeg, give the producer or the trader, before the identity of the grain is lost, an opportunity to appeal the grade so established should it prove unsatisfactory.

As the most convenient point where the work of sampling and inspecting grain could be concentrated, Winnipeg on this account is the point in closest proximity to the grain growing region where trading on a large scale is feasible. One of the requirements of any product that is the subject of dealings in an organized market on a large scale, is that its quality can be determined by tests that yield almost identical results when applied by different competent officials.

Grain meets this condition, but until an official grade has been declared, the technical conditions are not present for organized trading in bulk. While grain can now be graded at a number of western points, Winnipeg is by far the most important inspection centre, and for many years was the first point eastward where official grades became available.

The object of the Exchange is to provide an organized market where buyers and sellers of grain may find a common meeting place to conduct business under established rules of procedure. A formal statement of the functions the Exchange performs are that "(1) it provides a market place; (2) it provides market information; (3) it provides a system of arbitration; (4) it fixes minimum commission rates; (5) it regulates forms of contracts for future trading, and (6) it makes and enforces a set of by-laws, rules and regulations required by the first five functions."

The Exchange is organized as a purely voluntary non-incorporated association. As an association it does not buy or sell grain. The Exchange does not come within the purview of the Canada Grain Act, nor of the rules and regulations of the Board of Grain Commissioners for Canada. It is a self-governing institution founded on the consent of its members, based upon a mutual contract set forth in its constitution. The governing body consists of a president, a vice-president, a secretary-treasurer and a council of 12 members elected at the annual meeting of the membership.

I. THE ORGANIZATION OF THE EXCHANGE.

The Exchange has 382 members who alone have voting power. Companies are not members, but provision is made for registering them and thus giving them trading, though not voting, privileges. The actual number of membership certificates held by the members is 463, but any member who

holds more than one certificate has only one vote. While composed largely of individuals and firms engaged in grain handling or trading, resident in Winnipeg, and elsewhere in Canada, the membership includes many representative concerns from other important grain marketing centres, such as Minneapolis, Chicago, Kansas City, Duluth, New York, Philadelphia, San Francisco, Liverpool, London, Paris and Tokio. From the point of view of the main business done by the members, they can be classified as follows:

Elevator managers	110
Shippers and exporters	108
Futures brokers	79
Brokerage offices	61
Cash grain commission merchants	13
Millers and maltsters	18
Cash grain brokers	23
Vessel and insurance agents	13
Bankers	5
Railways	2
Officials	4
Non-active	27
	463

The representatives of the railways and of the bankers and the officials do not trade in grain. The vessel agents represent the transportation companies that convey grain down the lakes or through to Montreal. It is their business to secure charters for tonnage. The insurance agents sell insurance. Of the remaining 412 memberships, 79 represent those engaged primarily in futures trading, and 343 are held by those connected with the handling, the buying or the selling of cash grain. This latter group is composed of elevator managers, cash grain commission brokers, the millers

and maltsters, and the shippers and exporters. The Canadian Wheat Pools hold three memberships.

The nominal price of a membership in the Exchange is \$50,000. The price is set high to limit the membership, and to ensure that members shall be men of financial strength as well as to strengthen the hands of the committee on discipline. But as a rule memberships are not purchased directly from the association, the demand being met by the supply offered by retiring members. The price of these memberships are much lower. Technically, the membership is unlimited, and any attempt to speculate in membership certificates would fail. During the last ten years the range of price for memberships has been between \$5,100 and \$25,000, the average being approximately \$10,500. The last sale recorded in March of 1931 was for \$12,500. Besides buying a membership certificate an applicant must fill in certain forms which will give an indication of his general status, appear before the committee on membership and be elected by a ballot at a meeting of the council of the Exchange. When Mr. Arthur W. Cutten, of Chicago, one of the best known operators in wheat in America, recently acquired a membership in the Exchange in accordance with this rule, he made a visit to Winnipeg and appeared personally before the membership committee. A member who contravenes the rules of the association may be censured, fined or expelled according to the seriousness of the offence. In the event of the forfeiture of his membership, the Council of the Exchange has the discretionary power to sell the membership and apply the proceeds, first, to the payments of all fines, dues or assessments due to the Exchange, and second, to the payments of claims upon the defaulter by other members of the Exchange. If a surplus remains thereafter the council may pay it over to the member concerned. As a

result of the failure of a member of the Exchange, this rule was attacked on behalf of outside creditors in 1929, but was sustained in the trial court and in the court of appeal.

In addition to the council, 12 committees of members of the association are constituted to perform various functions. The Committee of Arbitration and the Committee of Appeals each consists of seven members who are elected by ballot at the annual meeting. The other committees are appointed by the council, and include the Floor Committee, the Cash Closing Price Committee, committees on by-laws, complaints, finance, licensing, quotations, radio and the "Regular" Elevator Committee. The name of the committee in most instances explains its duties. The general purpose of the Floor Committee is the charge and care of the rooms of the Exchange and the conduct of the members therein. The work of the Quotations Committee is connected chiefly with the use of the market quotations of the Exchange. Anyone who wishes to make a business use of the quotations, for example, to put them on a blackboard for business purposes, and anyone who wishes to install a ticker, must be recommended by the Quotations Committee. The committee also attends to the telegraphic services between the Winnipeg Exchange and other markets.

The function of the Cash Closing Price Committee is to establish the official cash price for the various grades of grain as of the close of the futures market. The committee consists of six members, who meet just before the close of the market and make a canvass of cash brokers and exporters, to secure from them the sales prices for the last actual transactions which have occurred, or bids on the various grades of grain. These bids are made to the committee, and are on the basis of what the exporter or broker would pay for a reasonable amount of grain if it were offered to

him. With these bids and prices in hand, the committee sets the official cash closing prices for the day. These are posted on a blackboard in the trading room at the close of the futures market. Extensive use is made of these prices. As soon as they are posted they become available to a committee of the North West Grain Dealers' Association which prepares the price list sent out to the agents of the country elevator companies at country points. They are part of the official record of trading kept by the Exchange. A daily record of cash closing prices is also sent to the Department of Trade and Commerce at Ottawa.

It is the duty of the "Regular" Elevators Committee to pass upon all applications for a terminal elevator to be declared regular, and the application must be approved by the committee before the declaration can be made. When a terminal elevator company desires to have its warehouse receipts tenderable in fulfilment of a futures contract, its elevator must be able to conform to certain requirements. The elevator must be connected with one or more of the eastern railway lines, and have direct facilities for making lake shipments. Its apparatus for handling grain in bulk expeditiously must reach a certain standard. For the year of 1930, the committee declared regular the semi-public elevators of 16 companies, including the Saskatchewan Pool Terminals operating five terminal elevators. Two public terminal elevators were also declared regular.

The Licensing Committee deals with applications for the licensing of country agents. A by-law of the Exchange requires that no members of the association shall employ a country agent unless the agent has been licensed by the Exchange. These licenses are good for one year, and may be suspended or revoked by the Exchange, so that it is possible for the Exchange to extend its control over the conduct

of business to the primary shipping points at country stations.

The first quarters for the Exchange were obtained in a building then occupied by the Winnipeg Board of Trade. In 1892 the Exchange moved to an office building erected on the Market Square. In 1898 accommodations were secured in the Winnipeg Chamber of Commerce building. This sufficed until 1908, when the Exchange opened its present home. The tremendous growth of the grain business handled through Winnipeg made further building necessary, and in 1916, 1917, 1920, 1921 and 1928 additional space was added to the building. The Exchange building is now one of the largest office buildings in Canada. It provides 240,604 square feet of office space, and apart from the area occupied by the Exchange itself, it accommodates hundreds of business offices and board rooms. The building throughout the year is a veritable hive of activity, which rises to a peak during the fall season.

When the block was erected originally, it was found necessary to organize a Traders' Building Association to take over the control of the building and act as landlord. The shares in this association were held by interests connected with the grain trade. The Traders' Building Association has since become a public company and its shares are listed for trading purposes on the Winnipeg Stock Exchange. The Grain Exchange leases from this association the space required for its trading room and offices.

Besides the offices occupied by the Grain Exchange, there are housed within the building various other organizations closely connected with the grain trade. These include the Winnipeg Grain and Produce Clearing Association, which is distinct from the Exchange itself; the Northwest Grain Dealers' Association, the Lake Shippers' Clearance Associa-

tion, the Traders' Building Association, the inspection and weighing departments of the Board of Grain Commissioners, the Dominion Grain Research Laboratory, the executive offices of the Board of Grain Commissioners and the radio studio of the Exchange. Members of the Exchange have first call upon the space available, and in addition to the organizations mentioned, most of the grain companies, commission men and brokers operating in western Canada have offices in the Exchange building. Several of the larger companies, however, have their headquarters in their own office buildings adjacent to the Exchange building.

The trading floor, offices of the secretary and the board room of the Exchange are located on the sixth floor of the building. There is also a large assembly hall on the eighth floor for general meetings of the membership, conferences or other gatherings of a similar nature.

The mechanical fittings of the trading room include two pits, one for wheat, and one for coarse grains. Beside each pit there is a pulpit. The occupants of these pulpits watch the markets and report the prices to the blackboard boys, who put them on the wall for the convenience of the traders. There is also operated a telegraph service which sends out Winnipeg quotations to other markets. In addition, all prices are officially recorded. One side of the trading room is lined with telephone booths which connect the traders with their offices, and a large part of one end is given up to the telegraph services. Including employees, the trading floor will have 600 persons on it during an ordinary day's trading.

II. THE MARKET.

In winter the market opens for trading at nine-thirty a.m. and closes at one-fifteen p.m. The summer hours are from 8.30 to 12.15. On Saturday, in summer, the market

closes at 11 o'clock, and in winter at 12 noon. Since Chicago, Minneapolis and Winnipeg are all on central standard time, there is no variation between the time of the trading sessions of the three exchanges. There are direct wire connections between these markets. There is a difference of six hours between Winnipeg time and time in Great Britain. Hence before the opening hour of trading in the Winnipeg market, the British closing cables have been received, and for this reason the market at the opening quickly registers the influence of the European situation.

Actual trading is conducted by three classes of operators: principals, brokers and futures brokers. When a principal acts for himself, he saves the commission charge. Very few principals, however, are active on the trading floor. The business is left to the brokers, who may be members of a brokerage department of a large grain company or may be conducting purely a brokerage business.

Three operations of trading centre in the Exchange. These are (1) the sale of farmers' grain and its purchase by middlemen who provide a continuous market for it as it moves off the farm and into commerce; (2) the sale for cash of grain accumulated by middlemen or by purchase by elevator companies at country points, to representatives of the consumer interests; these representatives may be the agents of domestic mills manufacturing for the home market or for export, the direct representatives of foreign consuming interests, or another class of middlemen who move the grain forward to sell at the seaboard; (3) the protection of sales or purchases by future sales or purchases on the basis of margins determined by the Clearing House Association. With the latter class of transaction must be included purely speculative dealings, where grain is bought or sold on margin in expectation of a rise or fall in price.

Farmers' grain is bought or sold in four positions. These price positions are (1) spot, when the grain is in store at Fort William or Port Arthur, and an official warehouse receipt has been issued indicating quantity and grade; (2) billed and inspected, where the grain has passed through an inspection point and has received an official grade, but has not reached the terminals; (3) on track, where grain is loaded in cars standing on the siding at a country shipping point ready for dispatch to a terminal or a mill; (4) street, when the grain is in a farmer's wagon or in store in a country elevator. Grain in the latter two positions is purchased at country points,¹ but farmers' grain at the terminals or in transit to the terminals is sold by the commission houses, or through the commission departments of country elevator companies.

The commission charge on selling farmers' wheat is one cent per bushel, but this charge covers the performance of various services. The commission man watches over the farmer's shipment from the time it is placed in his hands. He provides a checking service when the sample is graded, and if not convinced that the grade set is correct, will enter an appeal for a higher one. He is active in endeavouring to secure for grain of especially good quality a premium over the price for the grade. He scrutinizes the returns from the terminal elevator to ascertain that they are in order, particularly with respect to the charges and allowances for dockage of other grain. In brief, the commission man provides a skilled service to the farmer who places his grain in his hands to sell.

Cash grain transactions are entirely between members of the Exchange, and the name of the principals in the transaction is always disclosed by the broker. The commission

¹See chapter v. p. 102.

rate on cash grain is one-sixteenth of a cent per bushel. Every morning the cash grain broker sees the wires of exporters who have received bids from abroad overnight. He takes his instructions from the exporters. For instance, one of the latter will advise that he will take 50,000 bushels of No. 1 Northern wheat if it can be obtained at one cent under the market. Or the exporter makes an enquiry: at what price can the cash grain broker obtain for him 100,000 bushels of No. 6 wheat? The cash grain broker has his line of commission merchants and country elevators for whom he habitually sells, and he goes to them and finds out at what price the grain desired is obtainable. Then he returns to the exporter and makes the deal if he can.

In the futures market there are two classes of transactions: where the name of the principal is disclosed to the Clearing Association, and where the broker carries the account with the clearing house in his own name. The commission rate charged to non-members of the Exchange where the transaction is carried in the broker's name is one-quarter of a cent per bushel, to a member of the Exchange, one-eighth of a cent per bushel. Where the name of the member for whom the broker is acting is disclosed, and the account is handled in the Clearing House in the member's own name, the commission rate charged is one-sixteenth of a cent per bushel. In the futures market, as distinguished from cash transactions, four categories of sellers are recognized: (1) Buyers of unhedged grain moving into hedged position; (2) Hedgers on grain previously held unhedged in other markets; (3) "Spreaders", and (4) "Bear" speculators selling in expectation of a market decline. On the buying side of the market against these sellers are: (1) Buyers for consumption who ultimately intend to convert their purchases into cash wheat; (2) "Spreaders", and (3) "Bull" specu-

lators buying in expectation of a rise. To the latter class belong almost all of the general public who dabble in the wheat market.

It is in the futures market that the main activity of the trading floor appears. In fact, the futures market, reflecting as it does the influence of expected future events, such as a short crop or a surplus involving a carry-over, indicates the tone of the market. Its influence extends in both directions affecting the producer as well as the ultimate consumer. It affects the producer because the price list sent out to country points by the elevator companies for the instruction of their country buyers is influenced by the futures market. Farmers' grain bought at country points is invariably hedged at once by the sale of futures based on the date that the purchased grain can be carried forward to the terminals. In the larger companies, one man will devote all his time to the supervision of country purchases and the placing of hedges to protect them. Only in this way can the country elevator company assure itself of its trading and handling profit in the face of fluctuations in the price of grain. Prices at which grain can be hedged become therefore of cardinal importance to the producer, since the price at which the elevator company can sell hedges will determine the price it can afford to offer to the farmer.

In the export market also futures play an important role, though in this instance it is the foreign buyer who influences the futures market more than the reverse. The foreign buyer who plans to import Canadian wheat ordinarily will first purchase, when the price is attractive, a future for the month in which he plans to make shipment. In the futures market the contract grade is No. 1 Manitoba Northern, but the seller of the future has the privilege of delivering on his contract (a) a higher grade of wheat—No. 1 Manitoba

Hard; (b) No. 2 Northern at a discount in the price of three cents per bushel; (c) No. 3 Northern at a discount of eight cents per bushel, or No. 4 wheat at a discount of 21 cents per bushel. The contract grades and discounts are determined by the council of the Grain Exchange, and may be revised from time to time. The object in giving the seller the option of delivering the above grades on his contract, is to discourage and eliminate as far as possible attempts to corner the market, with the shorts unable to fulfil their obligations. It was only in 1927 that No. 4 wheat was added to the list of contract grades. The deliveries in which trading is most active are October, December, May and July. On certain occasions grain has been carried back to Fort William and Port Arthur in order to make delivery on a futures contract.

When a foreign buyer has purchased a future, his next step is to convert it into spot wheat at the terminal ready for shipment. Just when he will take this step will depend somewhat upon the spread in price between the future already purchased and the price of spot grain. When, however, he decides to act, ordinarily he will place his order with a cash grain commission broker, who will purchase the cash grain for him and at the same time dispose of his future. The seller of the cash grain will usually take over the future, since the grain he has sold has been hedged in the market already.

Or the foreign buyer may purchase from a large dealer, who has placed grain in store at Buffalo, or some other eastern point, in order to have it ready for nearby delivery. The dealer will have this grain in store hedged, and if the foreign buyer surrenders a future to the dealer, one will cancel against the other. But if the foreign buyer has no future to dispose of, then the dealer, having sold a certain

portion of his hedged grain, will have to go into the pit and buy back his future. Thus the sale of grain for shipment abroad stimulates business in the futures market. Lacking a demand for export, the market drags along in the doldrums unless offerings arising out of hedging sales are being absorbed by a strong speculative interest. During the fall of 1929 sales for export from Canada were light, but futures were bought heavily by certain operators and this kept up the price at which hedges could be made firm. With the continued decline in prices, ultimately the long interest in the market at that time suffered heavy losses.

Cash grain prices and futures prices bear an intricate relationship to each other which changes at different seasons in the year. Thus the spread between May futures and cash grain in January normally will be wide enough to cover, or almost cover; the carrying charges of grain in store until navigation opens in the spring, when it can be shipped. For instance, on January 24 of 1931, the price for No. 1 Northern wheat in store at Fort William was $3\frac{1}{2}$ cents per bushel below the May option. On the other hand, spot wheat sometimes commands a premium due to the necessity of sellers making delivery upon contracts when shipping is active in the autumn, and grain is not coming forward as rapidly as expected from country points. Thus on the last day of November of 1929, spot wheat at Fort William commanded a premium of one-quarter of a cent a bushel.

A country elevator company with wheat hedged, let us assume, on the May option, having been unable to dispose of it by cash sale at a satisfactory price, finds it necessary to carry it to a later date. It will carefully watch the spreads in price between May wheat and July or October wheat, and when the spread is judged to be most favourable to protecting carrying charges, will relinquish the May option and

buy that of the later date. Sales and purchases of this nature are commonly known among traders as "spreading." Another type of "spreading" occurs when one market is out of line with another. Operators then sell on the one which they think is too high, and buy on the other which is considered too low, aiming at a profit when their relative prices become normal. Spreading between distant markets and into forward months has the general effect of keeping the world price of wheat on the same level in all markets, taking into account the position of the grain.

A somewhat similar function is performed within the pit during trading hours by the "scalpers." "Scalpers" are independent operators who survive by making a small profit, such as an eighth or sixteenth of a cent per bushel, obtained by taking advantage of the minute to minute fluctuations which occur in the market during the course of a trading session. Thus, in the opening hours of trading there may arise a brisk demand due to export business over night. This will normally cause the price to rise somewhat. The scalper will then take the selling side of the transaction and for the time go short. Later in the morning, after the country elevator companies have obtained reports of purchases made on their account by country buyers, these companies go into the pit to hedge their purchases. Hedging pressure tends to lower the price. The scalper buys and thus covers his previous short sale. The typical scalper plans to come out even, sales balancing purchases, at the close of a day's trading. The effect of his operations is to reduce the spread in price between the high and the low during the course of the trading session.

Cash grain brokers, futures brokers, and scalpers are the roller bearings of the market. They are continually in receipt of bids and offers, and act between the exporters, or

other buyers representing the consumers, and the elevator companies and commission houses selling the western crop. Under these conditions, they know the state of the market better than any other group, and are able to buy and sell to the best advantage. They work on a very small commission, but they are able by their skill to maintain themselves as part of the marketing structure. Another advantage a broker gives the buyer or seller is that of secrecy in their operations. A large operator going into the pit himself would often reveal his plans to his business rival, and thereby hamper his operations.

For many years the Winnipeg Grain Exchange did not give any recognition to the practice of buying "puts" and "calls". Contracts of this nature were made undoubtedly from time to time by members of the Exchange, but the by-laws of the body explicitly stated that the Exchange did not in any manner recognize this form of trading. Trading in "puts" and "calls" seems to have grown in extent, however, and recently the Exchange has regularized the procedure by organizing a privilege market which is limited to one half-hour after the close of the futures market. During this half-hour, privileges are bought and sold on the trading floor of the Exchange. Privileges are dealt in at the rate of one dollar per thousand bushels. The purchase price is paid at the time the contract is made. The buyer of a privilege can secure the right to demand, or call, a given quantity of grain at the price set up until the close of the market the following day. Sometimes the option continues for a longer period, but it usually expires at the end of the next trading session. Similarly the buyer of a "put", purchases the right to deliver a certain quantity of grain to the seller at a given price if he chooses to do so. In neither instance need the privilege be exercised, but may be allowed to lapse at the end of its

term. If allowed to lapse, the seller gains the price paid by the buyer of the option. "Puts" and "calls" are a form of overnight insurance purchased by dealers who have large commitments, and fear a sudden break or advance between trading sessions. Thus exporters, who offer grain to Europe over night at a certain price, may protect themselves in this manner.

III. THE CLEARING ASSOCIATION.

Closely associated with the market and the Exchange, but an independent organization, is the Clearing Association through which all future sales are cleared. The Winnipeg Grain and Produce Exchange Clearing Association, Limited, is incorporated as a joint stock company, and was formed in 1904 to simplify the methods of future trading. The present manager has been in charge of it since its organization. The capital was placed at \$50,000 and was composed of 1,000 shares of \$50 each. Each member is required to purchase five shares. The present membership numbers 128, and a membership is valued at between \$12,000 and \$15,000. A larger membership has not been encouraged, since the larger the membership the more complicated the operations of the association become. Certain traders are not themselves members of the association but have their deals cleared through members. The fees for clearing are one-half cent per 1,000 bushels. The Association has built up very strong reserves. The balance sheet for the year ended 31 of July of 1928 exhibited assets placed at \$619,467.60, with no liabilities except to members for their capital and share of surplus.

The clearing association performs, with respect to transactions in grain for future delivery made on the open market of the Exchange, essentially the same function as a bank

clearing house accomplishes for member banks. Upon the acceptance by the manager of transactions in grain for future delivery, the clearing association assumes the position of buyer to the seller and seller to the buyer, in so far as its members are concerned. In this way, at the end of a day's trading, it is possible to cancel transactions against each other, and for a member to make settlement by writing a single cheque in favour of the clearing association, or by receiving from it one in his favour.

Each member of the association who desires to make use of it, must submit to the association an audited statement upon which he receives a line of credit. On account of the fluctuating value of the grain, the association requires a certain margin to be maintained at all times. When a broker's line of credit is exhausted, further margin is demanded. The limit of total trade that may be carried for any one firm is 7,000,000 bushels.

The advantages of the clearing association are: (1) it facilitates the handling of the immense volume of transactions in grain for future delivery in the grain exchange; (2) it relieves the members from depositing margins between themselves; (3) by guaranteeing the fulfilment of each contract it gives assurance of the safe holding and proper delivery in all transactions where there are future commitments.

The volume of transactions in the futures market is not definitely known from day to day, but on two occasions the Clearing Association has submitted figures to commissions of inquiry. In 1921, it was stated that there was cleared through the association from September 1, 1920, to April 21, 1921, a total of 1,466,892,500 bushels. Under the chairmanship of Sir Josiah Stamp, the inquiry into trading in grain futures reported that between May 1, 1929, and March

31, 1931, the average volume of daily transactions throughout this period of 581 days was 23,488,464 bushels. The changes wrought by this activity in the net contracts from day to day were generally small, the greatest single change being effected on October 28, 1929, when, with daily transactions of 38,743,000 bushels, the net open line was reduced by 4,283,000 bushels. The Stamp report points out that in most cases the changes in the open line was only from a few thousand to a few hundreds of thousands of bushels.*

IV. WINNIPEG PRICES.

The chief market for Canadian wheat is the export market. The Canadian demand for seed wheat, for flour for domestic consumption and for feed purposes absorbs roughly 100,000,000 bushels annually. The excess of each year's crop beyond this amount is available for export, and must be exported if the country is to prosper. The coarse grains also rely, but to a less extent, upon the export market. This means that activity in the Grain Exchange takes its measure from the briskness of foreign demands, for Canadian grain. When a good export business has been "worked" overnight, the brokers expect a good trading session to follow.

Winnipeg prices commonly have been regarded as a direct reflection of world values as registered on the Liverpool Corn Exchange. In the earlier days, when Canadian exports were much less than those coming from Russia and the United States, it might be said with approximate accuracy that the "values on the foreign markets, less cost of transportation, insurance, expenses of and profits to grain dealers, determined the price of wheat in store at Fort William and Port Arthur, which are the prices quoted in Winnipeg." Briefly, the amount of grain that Canada was able to offer or with-

**Report of the Commission to Enquire into Trading in Grain Futures*, Ottawa, King's Printer, 1931. p. 49.

hold from the world market was such a small part of the total available, that it had practically no influence in fixing world prices. The Canadian farmer looked at the Liverpool price, made the deductions above referred to, and found roughly the sale price at which he must dispose of his wheat.

But in the last fifteen years conditions have changed to such a degree that the above picture is no longer quite correct. The United States, with a greatly increased population to feed, has ceased to be so important a factor in the export trade. Canada, the Argentine, and Australia, according to the state of their own harvest, chiefly supply the amount that Europe requires from year to year. Under these conditions it is no longer quite accurate to say that values on the foreign market "determine" the price of Canadian wheat. Actually the price is established in part by the supplies available in Canada for export. These supplies are important enough to influence appreciably the world price of wheat. The price current in Liverpool is partly a reflection of the price current in Winnipeg. Instead of a central market, where world values are established which become ruling for other markets, Liverpool would be more correctly regarded as the most important of a number of markets, each of which exerts its influence upon, and is in turn influenced by, the prices established on the others.

It is no doubt true that Winnipeg prices will not remain lower than Liverpool prices for any considerable period of time. If Winnipeg prices, with due allowance for the cost of transport and handling, are below Liverpool prices, exporters will cause the price to rise by bidding for supplies to take advantage of the Liverpool market, or the Liverpool prices will soften due to the availability of supplies at a lower price in Canada. But the reverse situation may occur. Winnipeg prices may be out of line with Liverpool, by grain being withheld from the market for a higher price than the

current Liverpool quotations. Such a situation may continue for a considerable period of time, during which little export trade occurs. When this occurs, the absence of Canadian supplies of grain for export strengthens somewhat the world price of wheat as registered at Liverpool.

When such a situation does arise, it is due to the reluctance of the Canadian producers or traders to accept a price believed to be below the world value of the product. It has become possible for Canada to exert a slight influence of this nature on the world prices of wheat, by reason of the increased importance of Canadian supplies to the foreign consumer. Ultimately, of course, the supply and demand for wheat will determine the price, but direct producer resistance to low prices has its influence in determining the level fixed. The producer no more than the consumer plays a purely passive role. Nevertheless, the losses suffered by Canadian operators and the Wheat Pool has revealed the dangers that would attend any attempt to cause a pronounced change in world prices by withholding supplies of Canadian wheat.³

V. INVESTIGATION OF FUTURES TRADING.

~ The methods of the grain trade have always been subject to the suspicion of the producers of grain. Practically every cycle of low prices in cereals has been followed by an effective demand from the grain growers that the grain trade should be investigated by a government commission. There is no branch of commerce in Canada whose practices have been more completely exposed by investigation to public view than the methods employed in buying, selling and handling grain. Up to the present time, however, while the federal parliament, following successive investigations, has built up a comprehensive code governing the handling of

³See page 66, also 340.

grain from the time it is received into a country elevator until it passes to the mills or is exported, it has exempted from legislation the marketing operations of the exchange. But the low prices of the last year and the uncertain prospects for the immediate future led to the creation of another investigating commission, in April 1931, under the distinguished chairmanship of Sir Josiah Stamp. It differed from previous investigations in that it was confined to the single question of whether a market in futures was detrimental to the Canadian grain growers. Earlier investigations had always taken as basic the system of free marketing developed in Canada as the result of many years experience in merchandising Canadian grain. An organized exchange including a market in futures was always recognized as an indispensable feature of such a system.⁴ The Canadian pools, however, aimed at the realization of a system of direct selling by the organized producers to the consumer interests without hedging and without the intervention of middlemen. The success of such a system would render a market such as the Winnipeg Grain Exchange unnecessary. But in fact, the pools found themselves in a position where they sustained enormous losses and have survived only through government aid. The question that has not, however, been settled is whether this situation was due to the weakness of their general plan of trading or to incompetent direction. A strong group of farmers in the province of Saskatchewan attribute the main cause of the debacle to the lack of 100 per cent control of the crop and also to the free market at Winnipeg.

After conducting a rapid and exhaustive investigation into the effect of trading in futures upon the price received by the producer the Stamp Commission reported: "In brief, our answer to the question submitted is that in addi-

⁴See *Report of the Royal Grain Inquiry Commission 1925*, p. 128; also for a full discussion of speculation and future trading, *Report of the Commission to Enquire into Trading and Grain Futures*, King's Printer, Ottawa, 1931.

tion to the benefits reflected to the producer in furnishing a system of insurance for the handling of his grain, and in providing an ever-ready and convenient means for marketing the same, futures trading, even with its disadvantage of numerous minor price oscillations, is of distinct benefit to the producer in the price which he receives."⁵ It pointed out that the existence of minor, short range changes or oscillations was more clearly discernible by producers generally than major fluctuations extending from year to year and from quarter to quarter, but that the effect of trading in futures was to lessen materially those major fluctuations. Upon major trends of price during a long period, the Commission held that trading in futures had no effect. The price of grain in the long run must move with the price of other commodities.⁶

Although the Commission found no evidence of manipulation or unfair practices, it recognized among the farmers, a feeling of antagonism towards the Exchange, which had persisted over a long period of years. To improve the situation, it suggested there might be appointed a person of independent judgment and position who would have the right to go behind the scenes of the Grain Exchange at any time, with powers of investigation, and to report to the Federal Government. It pointed out that the psychology in which the whole scheme of trading in futures is set is not without its influence upon the proper working of the market. Responsible leaders of the Grain Exchange have accepted the findings of the Stamp Commission and it is not impossible that the effect of its conclusions will be the establishment of some form of supervision over the Exchange, with a view to removing the suspicions of the farmers.

⁵ *Report of the Commission to Enquire into Trading in Grain Futures*, Ottawa, King's Printer, 1931, p. 72.

⁶ For a criticism of the Stamp Commission, see C. R. Fay, *The Economic Journal*, Dec., 1931, p. 649.

CHAPTER XII

THE GRAIN COMPANIES

WHILE public interest in the grain trade centres upon the operations in the market and the ceaseless fluctuations in price that take place there, the Exchange really derives its importance from the many large grain companies that compose its membership and make use of its facilities. These are the pillars of the grain trade. The first group of companies represented are the country elevator companies, which combine the operation of a line of elevators with the merchandising of grain and the sale on commission of grain shipped to the terminals by the farmers. Then there are the terminal elevator companies engaged in storing, cleaning, mixing, selling and discharging grain to the consumer markets. The large milling companies are represented either directly or through their affiliations with country elevator companies. The export business proper is limited to a few large concerns, usually controlling subsidiary export companies. If to these are added the grain, freight, and insurance brokerage houses, some idea may be formed of the various elements that go to compose the structure of the grain trade. In this picture the Canadian pools, although not represented upon the council or the committees of the Grain Exchange, have stood out, in recent years, as large elevator owners, large terminal owners, and important factors in the export trade.

I. COUNTRY ELEVATOR COMPANIES.

As a result of concentration in the grain trade, the average size of country elevator companies has increased

greatly in recent years. There are still a number of small and medium-sized companies; but the larger units now predominate. Different means might be employed to indicate the size of a typical country elevator company, such as capitalization, volume of grain handled, or the number of country elevators operated. Of these the last is really the most satisfactory since the basis of capitalization differs in the various companies, and the volume of grain handled varies from year to year in all sections of the country.

A company operating not more than 20 country elevators may be considered by current standards a small company, companies operating from 20 to 100 elevators would be classed as medium-sized enterprises, while any company with a line of elevators numbering between 100 and 350 would be considered large. A few companies with a line of elevators beyond this range are very large enterprises indeed.

According to the licenses issued for country elevator companies for the crop year 1929-30 there were just over 100 companies with not over 20 elevators each. These companies operated 271 elevators. The list included 68 local companies whose activities were confined to one elevator apiece. In the medium-sized class a dozen companies controlled over 547 elevators. There were 14 large companies operating 2,087 elevators. Since there were 5,471 elevators in all at the time of reporting, the foregoing companies accounted for only slightly over one-half of all the country elevator houses under license.¹

There were five companies with a line of country elevators in excess of 350 each. By far the largest of these was the Saskatchewan Pool with 1,047. The Alberta Pool operated 438, and the United Grain Growers, 419. Thus three out of the five companies in this group represented farmer

¹February 19, 1930.

ownership, and these three accounted for the control of 1,904 country elevators out of the total of 5,471. The other two very large companies are the Alberta Pacific Grain Company, with 353 and the Federal Grain Company with 355 elevators. It is impossible to state what the capital investment of the average grain company is, for the companies vary in size and in methods of capitalization. For companies included in the list as operating from 100 to 350 elevators the range of capitalization is from \$500,000 to \$4,000,000.

The office organization required to administer successfully a line of country elevators is quite extensive. The country end of the business requires constant supervision both from the standpoint of ensuring proper handling of grain and from that of meeting competition from rival agencies. This supervision is secured by the employment of travelling superintendents. The company divides its territory into units for supervision. The size of these units depends upon the number of elevators in the district and the facilities for moving from one point to another. If elevators are distant from one another, the travelling superintendent will have fewer elevators to supervise and will have a larger territory under his control. The number of elevators under the supervision of a travelling superintendent ranges from 21 to 30. It is not considered possible to secure efficient supervision with a greater number under one superintendent.

The travelling superintendents are constantly on the road and are charged with the duty of guiding and assisting the agents located at the elevators within their territory. When a dispute occurs between the company and one of its patrons and the local agent is unable to settle the matter, the superintendent takes charge of the negotiations. The superintendent also keeps under his survey the ability of the local agent and if incompetence or unreliability is disclosed, he takes

steps to have the man removed. Where a company is very large, it will also employ several general superintendents or managers, who will be in contact with the travelling superintendents and will exercise control over them.

A very large part of the success of a country elevator company depends upon these officials. The sort of man employed at the local shipping points and the attitude he adopts towards the farmers depend chiefly upon the superintendents. In the grain trade a fruitful source of irritation is misunderstanding between the company and its patrons. Sound supervision and tact are required to reduce complaints to a minimum and to build up the trade of the company. The farmer holds in reserve the right to appeal to the Board of Grain Commissioners if he thinks he has been unfairly treated, and most companies, as a matter of business policy, and to avoid having a formal complaint lodged, will go to considerable lengths to satisfy a patron.

At the head office there are four very important officials. These are, the manager, the office manager or secretary, and the persons charged with placing hedges, and with watching the grain pass through inspection and into the terminals. At the head is the general manager, who usually attends to the financial aspects of the company's operations. The handling of grain at country points requires a large amount of ready cash. Street grain is purchased on a cash basis. In other instances, where grain is purchased or where grain is shipped through a country elevator, it is the practice of the farmer to take a generous advance. While the task of financing this movement ultimately devolves upon the banks, it is accomplished through the medium of the elevator companies. The manager must estimate the amount of credit required from day to day and conduct the necessary negotiations for it with the banks. He must also see to it that his credit is dis-

tributed according to needs at the country points where his company is operating. As a rule, the general manager or his assistant maintains close contact with the country agents, both directly and through the travelling superintendents, and he is responsible for the policy adopted by the company in its competition with other companies to secure grain.

The regular country elevator companies hedge their daily purchases in the country on the market in futures. This is one of the conditions made by the banks before they will finance a country elevator company's operations. Where the company is large, one man will devote his time to placing hedges. It is a task that calls for unremitting alertness and experience in the grain trade. There is a common saying in the trade that a company will make money or lose it according to the skill with which it places its hedges. As a general rule the companies hedge all grain as purchased, but there have been exceptions to this excellent rule when companies have speculated by failing to place a hedge. It is doubtful whether the gains made in this way have balanced the losses.

The shipper of grain from a country point usually designates the elevator company through which he ships to be his agent and look after his grain with a view to selling it when he gives instructions. This is not always the case, however, for a farmer may order his grain to be turned over to another company to sell. Country elevator companies have, therefore, an important organization designed to look after their commission orders. The services rendered are similar to those given by a commission house. The responsible official must make certain that the grade placed upon the shipment by the inspection department is checked by a technical expert, upon whose report an appeal will be made if deemed advantageous. The warehouse receipt, properly registered,

must be secured from the terminal elevator company, and must be checked against the official weights and certificates of grade and dockage. The same precautions are naturally taken by the company where the grain in question represents its street purchases, even though it may be shipped to a terminal elevator under the same control. Ordinarily, when under common ownership, the two enterprises will operate as completely separate entities.

When the grain is finally in store, there remains the task of making sales. The process of selling cash grain has already been described in connection with the Grain Exchange. A farmer while holding his grain often takes large advances where grain is shipped through a country elevator company, and if there are wide swings in the market his equity in the grain may approach the vanishing point. The situation must be watched with the same care bestowed upon margin trading. Not infrequently the company finds itself compelled to close out the farmer's grain in order to protect itself against loss. This action is frequently productive of dissatisfaction upon the part of the farmer although as a condition of receiving the advance loan he signs a waiver specifically granting the company discretion to sell when the margin appears unsafe. As a rule, companies try to warn their patrons before actually closing them out in order to give them an opportunity to cover if they desire to hold their grain for a more favourable market. If the market moves quickly, however, it is not always possible to do this.

Finally, the country elevator company's business involves transactions with thousands of farmers for separate parcels of grain. Each consignment carries its own quota of documents. Out of this fact arises the need for a large office staff. The secretary of the company, who may also be in

charge of the office, is usually responsible for the documents and the proper preparation of returns to shippers. When settlement is sent out to a farmer for the handling and sale of a car load of grain, the statement of the transaction is accompanied by the official certificates of weight and of grade. The statement itself is of an elaborate nature and shows the various outlays and charges against the proceeds of the sale. These include handling charges, freight, official inspection fees, official weighing fees, terminal charges, interest on freight charges advanced, interest on advances taken by the farmer, if any, cleaning and drying charges, if any, allowance for dockage screened out of the grain when this occurs, and commission for making the sale.

		No. _____
_____ Winnipeg _____		193. .
In Account With _____		
_____ Grain Company Limited		
		Gross 1093.10
		1% Shrinkage 11
Car No. Grain Grade		Bushels
342627 Wheat Tf. 4	Tickets Surrendered	1082-10
	Less Inspector's Dockage	
	4½% and Tariff Allowance	49-10
	Tickets Net Weight	1033
Contract 4½ Screenings, 2600 @ 1.00		1.30
By 1033 Bushels Tf. 4 @ 55¼		570.73
Freight on 64930 Lbs. @ 25 Cwt.	162.33	572.03
Inspection and Weighing	2	
Demurrage Appeal	3.25	
Cleaning Charges @ ½ per bus.	5.41	
Drying Charges Bus. @ _____		
Bulkhead Charges as Per Railway Tariff		
Removing Bulkhead		
Storage at Terminal. Days @ 1/30 of a Cent		
per Day _____		172.99
		399.04

Handling Charges at Station.....	18.94
Storage at Station.....	
Commission Screenings 33c. Wheat 10.33.....	10.66
Interest on Freight Days.....	
Interest on Advance Days.....	1.87
Advance on Car.....	325.00
Exchange	.45
	356.92
Balance Due.....	\$42.12

The complexity of the settlement statement which the farmer receives depends to some degree upon the cleanliness of the grain and to some degree upon the terms of sale. Where a car of No. 1 Northern without dockage is sold on track on the closing price of a given day, the statement is comparatively simple. But other terms of sale and settlement may be arranged which are quite beyond the comprehension of the average layman. For example, a farmer may sell a car load of wheat on track which is not yet graded to a company basis, No. 1 Northern Fort William. On the date on which this sale was made the price of No. 1 Northern wheat Fort William may be \$1.25 per bushel. But the wheat in the farmer's car when graded may turn out to be No. 5 Northern. According to the established rule, settlement in this case will be regulated by the market the second day after the car was officially weighed on being received into a terminal or interior storage elevator. This does not mean, however, that the farmer will receive the price current for No. 5 Northern on the second day after unloading, nor that he will receive the price ruling for No. 5 Northern on the day upon which he sold the car. The significant factors in determining the settlement will be the price of No. 1 Northern upon the day he made the sale and the spread between No. 1 Northern and No. 5 on the second day after

unloading. Thus, if the price of No. 1 Northern at Fort William on the date of sale was \$1.25 per bushel and the spread between No. 1 Northern and No. 5 on the second day after unloading was 19 cents, the settlement price for his car under these conditions would be \$1.06 per bushel. In the interval that occurs between the sale and the settlement date the spread between the grades sometimes narrows and at other times widens. When it narrows the advantages lies with the farmer; when it widens, with the purchaser.

In addition to settlements of this nature it not infrequently occurs that the elevator company advises the farmer that it can possibly obtain a premium over the market price upon his car if the farmer is willing to have it diverted into a mill or into a private terminal elevator. The amount of the premium may vary from one-half cent a bushel up to a cent and one-half. The farmer may give the company the authority to divert the car, and when at a later date he orders its sale, he will receive, in addition to the current price for the grade, the additional sum represented by the premium.

Part of the complexity of the return to the farmer is due to the fact that the elevator company makes certain payments which are later charged against the farmer. When the car is delivered at a terminal elevator the charges that must be paid by the shipper are as follows: Elevator charges, official inspection and weighing charges, freight charges (including freight on dockage), and interest on the freight charges which have been advanced by the elevator company to the railway. Ultimately in disposing of his grain the farmer in addition will be subject to storage charges, usually cleaning charges, and a sale commission of one cent per bushel.

II. THE NORTH-WEST GRAIN DEALERS' ASSOCIATION.

An important organization, uniting the country elevator companies, is the North-West Grain Dealers' Association. In 1904 these companies organized the North-West Grain Dealers' Association as a corporation under the laws of the Province of Manitoba. This body is in the nature of a trade association through which the members act to protect their interests when these are under attack, as well as to provide certain services which can be secured most conveniently by co-operation. On various occasions, when the trade has come into conflict with the grain growers, the North-West Grain Dealers' Association has borne the burden of defence. In 1907 its activities were under review in the alleged Grain Conspiracy case.

The most important function of the association arises from the fact that the manager of a country elevator company has to instruct his agents at country points concerning the price the company can afford to pay for grain. There is no other way by which a company can buy grain at numerous points in the country. The company's agent requires to be informed with respect to track and street prices as the conditions of the market change from day to day. In connection with this service use is made by the Association of a commercial publishing company closely associated with the trade. This company at the close of the market each day sends telegrams, showing track prices and street price changes, to the agents of country elevator companies in the provinces of Manitoba and Saskatchewan that are owned by members of the North-West Grain Dealers' Association. There is an association called the Western Grain Dealers' Association at Calgary that sends out a similar telegram to agents at country points in Alberta.

Where there are several companies operating elevators

at a single country station, there is an advantage in sending only one telegram to that point. One agent at that station receives the telegram and shows it to the other elevator agents. By this method the very considerable cost of telegraph messages is reduced. Only members of the North-West Grain Dealers' Association receive this service. The United Grain Growers, Limited, being a farmer-owned company and not a member of the association, sends out its own wires to the agents of its elevators in Manitoba and Saskatchewan, and Alberta. At points where the Pool elevator agents handled non-pool grain a similar service was used.

The track price sent out in this way for the North-West Grain Dealers' Association is the track price posted² in the Winnipeg Grain Exchange at the close of the market, minus the commission of five-eighths of a cent a bushel on oats and one cent a bushel on all other grains. It is called for this reason the net track price. It is not varied in any way except as above by any action of the North-West Grain Dealers' Association.

The street prices sent out are somewhat different in this respect since street prices do not issue from the Exchange, but are the prices paid to growers for lots purchased that are smaller than a car load. The North-West Grain Dealers' Association has a representative committee which prepares a price list for street grain of the various grades and varieties. This list is mailed to the agents of members of the association and replaced by a new list from time to time as the conditions require. Between the issues of the price list for street grain agents are advised by telegraph not only of track prices, but also of changes in street prices.

Apart from the general conditions which govern the spread between track and street prices the committee in

²See Closing Prices Committee. p. 285.

arriving at a street price for a certain shipping point will take into consideration competition from independent track buyers, and farmer companies, as well as the keenness of competition between the companies within the membership itself. When the competition is unusually keen for street grain, the spread between street prices and track prices narrows perceptibly. When the Saskatchewan Co-Operative Elevator Company was operating, as a matter of policy it maintained a narrow spread between the two classes of grain with a view to giving the farmer who could not afford to ship a car load of grain a better price. The North-West Grain Dealers' Association met this competition at first by issuing a special price list with narrowed spreads at individual points where the Saskatchewan Co-Operative Elevator Company was in competition with its members. It was found impracticable, however, to differentiate between points on this basis, and the special price list was made applicable to all shipping points in the territory affected.

The Association when on its defence emphasized the fact that the prices sent out are only a suggested basis price, and that they carry with them merely the weight of a suggestion or recommendation made after careful consideration. It pointed out that there was no penalty or formal censure provided for deviations from the list by members of the Association. Although in the main there is evidence that the prices set forth in the list are adhered to fairly closely a good deal of competition is still possible among the agents of different companies at a country point. Practically all elevator companies show over-grading at country points during a season's operation, and this is not so much due to failure to recognize the correct grade for the grain but a method of securing it in the face of competition. In the same way the agent frequently waives taking dockage on

grain that is not clean in order to secure it. Moreover, elevator companies where they believe they are not securing their share of grain available at a given shipping point do not hesitate to increase the price over the list price. In the judgment delivered in the alleged Grain Conspiracy case of 1907, the judge declared that he found no agreement among parties to abide by street prices, that the prices were frequently broken by increases, and that he could not "see in them more than reasonable business regulations."

The North-West Grain Dealers' Association also acts to protect its members against losses from fire or losses arising out of the dishonesty of its agents at country points. With over 5,000 country elevators and as many agents it is inevitable that certain losses should be due to carelessness on the part of agents or even from direct dishonesty. The Association operates an inspection bureau with a view to limiting as far as possible losses of these kinds. Membership in the inspection bureau is wider than in the Association itself; it may include farmer-owned companies.

Every four months the Association receives a report on the physical condition of each country elevator represented in the bureau, signed by the superintendent of the company owning the elevator. The report is made on a form provided by the bureau. The main object is the elimination of risk by fire. Experience has shown that the hazards by fire are considerable and that it is necessary to take concerted action to reduce the risk as far as possible. On the average about 50 elevators are destroyed by fire each year.

Closely connected with the fire risk is the risk involved in the selection of agents. Dishonest agents have frequently sought to hide their peculations by burning the elevators. The superintendents of the companies report confidentially three times each year upon the agent in their employ. In

addition to the report on the agent by the superintendent, the bureau also calls for confidential reports on agents from its own inspecting officers. In securing these reports the bureau serves as a clearing house for its members. It has all the reports upon all the houses within its scope and all the reports upon all the agents. The material is available quickly and cheaply and it has been found of great service in connection with the engagement of agents. Elevator agents maintain that this service operates as a black list, but no serious abuses have been revealed in connection with it.

In addition to the functions already described the North-West Grain Dealers' Association buys and sells for its members certain supplies, and issues a crop estimate. The supplies which it handles are those needed by the operators of elevators, such as, gasoline, kerosene, lubricating oils, engine repairs, grain tables, drums, batteries, fire extinguishers. The Association handles in this way annually over 500,000 gallons of gasoline and kerosene and 10,000 gallons of lubricating oils. The object of the Association is to procure these articles for its members at the lowest possible cost. It does not aim at making a profit out of these transactions.

Very many agencies issue an estimate of the grain crop of western Canada every year. The crop estimates of the North-West Grain Dealers' Association are the only estimates issued by any section of the grain trade at Winnipeg. The estimates of the North-West Grain Dealers' Association differ from other estimates in that they are not made until the crop has been harvested and until deliveries begin to be made to country elevators. The first estimate is issued about the middle of September, its second about the end of the year, and the final estimate in the early spring. It secures reports on the crop from country elevator agents whose owners are members of the association. Compiled after the

grain has been cut and the movement of the crop started, this estimate is highly regarded. The Winnipeg Grain Exchange, as an institution, does not issue any estimate of the crop; neither does any other association or institution connected with the Exchange.

III. THE TERMINAL COMPANIES.

As compared with a country elevator company the directive organization of a terminal elevator company is relatively simple. The plant is concentrated and there is not the elaborate organization necessary for supervising country operations. If it is a public terminal elevator, the duties of the operator are largely confined to the reception, cleaning, drying, storing, and shipping of grain. Grain is received as far as the capacity of the elevator permits and is shipped out on the order of the holder of the warehouse receipts. The problems that face the superintendent of a terminal elevator are connected with the physical handling of grain and include cleaning, drying and, in the semi-public and private elevator, the mixing or blending of grain where this practice is permitted. Technical skill in these operations is the first requisite. In addition, the superintendent must be always on the watch to guard against grain going out of condition through heating. Because of the size of the bins in a terminal elevator this is a heavy responsibility, for if heating should occur, the loss will be comparatively heavy if not discovered early. The superintending staff of a terminal elevator is not infrequently recruited from the officers in the federal grain inspection service whose training and knowledge of grain fit them for such a post.

There is, however, one aspect of terminal operations in the case of semi-public and private terminals that is of considerable importance. That is the problem of keeping grain

moving out as rapidly as possible during the shipping season and, during the season when shipping is inactive, of keeping the elevator as full as possible in order that storage may be earned. When the spread between spot wheat and the May option is sufficient for the elevators to earn storage, grain is frequently bought and hedged solely for this purpose. As a result, during some winter seasons a large amount of grain at Fort William and Port Arthur is transferred from one elevator to another purely for this reason. If grain is not coming forward freely enough from the country to maintain the elevators in stocks during the winter, the competition between the terminal elevator companies for grain for storage may become quite sharp. The terminal elevator operator fears a congested elevator during the shipping season and an empty one during the season while grain is not moving.

The capitalization of a terminal elevator company will vary with the size of the elevator. A company possessing an elevator with a capacity of 5,000,000 bushels will have a capital of about \$4,000,000.

IV. CONCENTRATION AND INTEGRATION.

The grain trade of Canada exhibits in a very high degree integration of facilities and concentration of financial control. Each large country elevator company has its own terminal elevator connections to which, unless specifically directed otherwise by the shipper, it turns over all grain for terminal handling. Conversely, each terminal elevator company has its country affiliations which assure it of a line of feeders for its terminal house or houses. In some instances the integration of facilities is due to the action of the terminal company; in other instances, to the country elevator company. The motive on the part of the country elevator company is to share in the profits of the terminal handling of grain, which

for a considerable period of time has been the more lucrative department of the business. On the other hand, as this movement progressed terminal houses found the need of assuring to themselves a flow of grain. A terminal elevator relies upon volume of handling as the basis of its profits. A terminal elevator company without country connections for its terminal found itself in an inferior competitive position, since it must rely upon shipments directed to it by the small elevator companies without a stake in the terminal business or by commission houses or by farmers who specified it for their consignments. The only other alternative would be to purchase grain in the open market to fill its house. The competition for grain among the terminals, particularly in a year with a light crop, is too keen to make this a happy situation. The absence of a strong line of country feeders was one cause of the failure of the Electric Elevator and Grain Company at Fort William in 1930. Thus the linking up of lines of country elevators to terminal houses has shown itself to be advantageous to the owners of each.

The method by which affiliation is maintained varies in different groups of grain-trading organizations. In some cases the country elevators and the terminals are operated by a single company. This is not, however, the common practice. In other instances one company is a subsidiary of the other, the control lodging either with the country elevator company or with the terminal company according to the circumstances in which integration was achieved. Finally, without either organization controlling directly the other, a community of interest may be maintained by stock ownership in each company resting with the principal interests represented in the two enterprises and being exercised through interlocking directorates.

As a result of developments of this nature there are not

more than a dozen important competing groups in the Canadian grain trade of western Canada. This is, of course, exclusive of a number of small concerns which are to be found in all branches of the trade. Moreover, between many of the larger groups there are individual cross lines of connection by which some community of interest may be inferred. Through personal holdings of stock and representation on the board of directors the grain organizations have ramifications extending into the milling, malting, baking and feed industries and the field of insurance. They are also well represented upon the directorates of the chartered banks. As a side line at their country points many companies operate coal sheds and lumber yards.

In the final analysis the control of all these large interconnected organizations is exerted by a comparatively small group of men. They have practically all been connected with the grain trade for many years and have either built up their position by their own energy or have succeeded to it by inheritance. The properties directed, controlled, or managed by H. E. Sellers, James Richardson, Sidney Smith, A. L. Searle, the Peavey interests, the United Grain Growers, W. A. Anderson, W. H. McWilliams, W. R. Bawlf, N. Paterson and McCabe Brothers, outside of the Wheat Pools, comprise the bulk of facilities devoted to the handling and marketing of Canadian grain.

The larger organizations are accounted for either by the gradual expansion of old established grain firms of a family type which have grown with success and with the enlargement of the grain growing area, or they have been formed in recent years by the combination and amalgamation of groups of moderately-sized companies into large single units. The latter development has been due partly to the severity of competition caused by the formation of the Wheat Pools,

but even before the rise of the Pools the trend had set in definitely towards large scale enterprises.

Examples of the gradual growth of companies, controlled by a particular family, to an important position in the trade are those represented by the Richardsons, Searles, Peaveys and the Bawlf. The Richardsons have been in the Canadian grain trade for three-quarters of a century. Beginning in Ontario, they extended to the west with the opening up of Manitoba. Richardson companies include the Eastern Terminal Elevator Company, with a terminal elevator at Port Arthur having a capacity of 5,500,000 bushels; the Pioneer Grain Company, with 171 country elevators, and the Saskatchewan and Western Grain Company with 44 country elevators. Through James Richardson and Sons, Ltd., Richardsons have also connections with a number of small independent country elevator companies. This gives their terminal additional feeders. Richardsons hold an important position in the export trade. They possess one of the four or five important export organizations. The present head of the family is James A. Richardson, who has large financial interests apart from the grain trade. He is a director of the Canadian Pacific Railway and of the Canadian Bank of Commerce.

The Bawlf Grain Company until recently was controlled by the family of the late Nicholas Bawlf, who settled in Winnipeg in 1881. The Bawlf Company is now a publicly owned company. The company has 139 country elevators and a terminal at Port Arthur operated by a subsidiary company with a capacity of 2,350,000 bushels. The president of both companies, W. R. Bawlf, is also a director of the Vancouver and Pacific Terminal Companies. Through the terminals of these companies the Bawlf Company has arrangements to handle its shipments to the Pacific Coast.

The Searle and the Peavey investments in the Canadian grain trade represent American capital. The principals in both these groups were established in the American grain trade at Minneapolis. They were quick to see the possibilities of the Canadian west and became interested in the Canadian trade partly through the efforts of the Canadian Northern Railway to secure elevator facilities along its lines. In 1929 the Searle interests were consolidated and the Searle Grain Company was incorporated under a Dominion charter. The new company took over the Home Grain Company, the Saskatchewan Elevator Company, the Searle Grain Company and the Liberty Grain Company. These were country elevator companies with a total of 315 country elevators, having a storage capacity of 12,000,000 bushels. They now control 334. The new company also controls the Searle Terminal Company with a terminal elevator at Fort William with storage capacity of 5,000,000 bushels. It is also interested with other grain companies in the Northland terminal elevator at Fort William. Terminal facilities at the Pacific coast are provided for by affiliation with the Vancouver and Pacific terminal elevator companies. The stock of the Searle Grain Company is owned by the former stock holders of the merged companies and no stock has been offered to the public. Control of the Searle interests rests with A. L. Searle of Minneapolis. S. A. Searle, a son of A. L. Searle, and N. L. Leach and J. M. Gilchrist, sons-in-law, are vice-presidents of the Searle Grain Company.

The Peavey interests, also of Minneapolis, control the following country elevator companies:—the British America Elevator Company with 132 elevators, the National Elevator Company with 120 elevators, and the Northern Elevator Company with 171 elevators. Their terminals at Fort William are the Grand Trunk Pacific Elevator on the waterfront

with a capacity of 5,750,000 bushels and the National Elevator, a small inland house with a capacity of 85,000 bushels. At the head of the Peavey interests in Winnipeg are R. T. Evans, E. W. Kneeland, and G. W. Heffelfinger.

The North Star Grain Company with 101 country elevators, and the Union Terminal, Ltd., with a semi-public terminal elevator at Port Arthur of 2,000,000 bushels capacity, is owned by W. A. Anderson and members of his family. Mr. Anderson came to Winnipeg in 1901 from Springfield, Minnesota; where he had previously had experience in the grain business. He is also a director of the Federal Grain Limited and has affiliations with the Northland Elevator Company operating the Northland Terminal Elevator at Fort William.

Apart both from the family type of grain company just described and the large public companies which had their birth in a merger or consolidation, is the United Grain Growers. This company has now been in existence 25 years. The United Grain Growers, as we have noted in a previous chapter,¹ grew out of the determination of the western grain growers to own, co-operatively, their own means of handling and selling grain. Along with the former Saskatchewan Co-operative Elevator Company, it fulfilled this function for many years. In 1923, when the movement to organize the grain growers into pools developed, the United Grain Growers, unlike the Saskatchewan Co-operative, was not absorbed into the new organization. It remains, therefore, as a farmer-owned organization, operating along the same general lines as the companies that are representative of the trade. In the course of years the United Grain Growers Company has built up a substantial organization. It has 469 country elevators and operates a terminal of 5,500,000 bushels cap-

¹See page 20.

acity at Port Arthur. At Vancouver it controls the United Grain Growers' Terminals, Limited, which operates a terminal of 1,630,000 bushels' capacity. It also carries on the business of exporting grain through two subsidiaries, one with headquarters in New York, and the other in Winnipeg. The United Grain Growers thus represents a completely integrated unit in the grain trade with export connections both by the Pacific and by the Atlantic. Until recently its president was Hon. Thomas Crerar, who resigned to enter the Dominion cabinet and who was replaced by R. S. Law.

A new type of large organization in the grain trade is exemplified by recent mergers or consolidations, such as, the Reliance, the Western, the Federal, and the Canadian Consolidated grain companies. In general, the formation of these companies marks a change in the grain trade, as in most instances their shares or bonds have been offered to the public and their securities are traded in on the stock exchanges.

In 1927 the Reliance Grain Company was formed to take over or control the Reliance Terminal elevator at Port Arthur, the Smith-Murphy Grain Company and its subsidiary the Smith-Murphy Company of New York, and the Province Elevator Company with 158 country elevators, and now control 186 country elevators. The Reliance Grain Company has a total storage capacity in the country of 6,100,000 bushels and a terminal capacity of 3,550,000. It has its own export organization. Sidney T. Smith, president of the company, is also a director of the Ogilvie Milling Company and of the Bank of Nova Scotia.

The Western Grain Company was organized in 1928 and absorbed the Western Terminal Elevator Company with a terminal at Fort William, the Western Elevator Company, the State Elevator Company, the Central Grain Company,

the Spencer Grain Company, and the Beaver Grain Company. The merger gave the new company control of over 273 country elevators and a terminal storage capacity of 3,100,000 bushels. It now has 281 country elevators. The president of the Western Grain Company is C. G. Spencer, the other directors being the principal officers of the other companies included in the merger.

The Federal Grain Limited, with assets estimated at \$9,250,000, was organized in 1929. This company was formed to acquire as going concerns nine grain companies, the Federal Grain Company, the Stewart Terminals, the Union Grain Company, the Northwestern Elevator Company, the Brooks Elevator Company, the McLaughlin Elevator Company, the International Elevator Company and the Topper Grain Company. It also acquired control of the country elevators previously operated in the western provinces by the Maple Leaf Milling Company. Control was obtained in all over 338 country elevators and three terminal houses at Fort William and Port Arthur, with a storage capacity in the country of 11,250,000 bushels and 7,065,000 bushels at the head of the Lakes. At present it operates 393 country elevators. H. E. Sellers, president of the grain firm of Melady, Sellers and Company, is managing director of the Federal Grain Limited. He is also a director of the Imperial Bank of Canada.

The original directorate of the Federal Grain Limited was interlocked with the Maple Leaf Milling Company, the Alberta Pacific Grain Company, and the Northland Elevator Company. These affiliations illustrate the wide range of associated interests with which a large grain company may become connected. The Alberta Pacific Grain Company possesses 375 country elevators, having a capacity of 14,700,000 bushels, and through subsidiaries in controls ter-

minals at Vancouver with a storage capacity of 2,225,000 bushels. It also controls the Atlas Flour Mills at Vancouver, capable of an outturn of 600 barrels of flour per day. The Northland Elevator Company operated the Northland Terminal elevator at Fort William with a storage capacity of 7,500,000.

Of other consolidations, one is the Canadian Consolidated Grain Company, headed by W. H. McWilliams. This merger absorbed the Canadian Elevator Company and the Dominion Elevator Company. The country operates 149 country elevators. At the head of the Lakes it controls two elevators which were previously known as the Empire and the Thunder Bay terminals, the former at Fort William and the latter at Port Arthur. Mr. McWilliams is vice-president and general manager of the Monarch Lumber Company, a director of the National Trust Company and of the Royal Bank.

As already indicated, a number of the large elevator companies have their own export organizations. These include the Reliance, Richardson's, the United Grain Growers and the Pool. In addition there are the British Empire Grain Company and the Norris Grain Company, which has its head office in Chicago, and is managed at Winnipeg by C. C. Fields. There are also representatives of the great international houses of Dreyfus and Bunge, and of the Scottish Co-operatives. The organizations mentioned above handle over 90 per cent of the export business.

The strong trend which at present exists towards consolidation and the creation of large handling and marketing units in the Canadian grain trade does not appear to have run its course. Certain savings growing out of the economies of large scale handling and the advantages from a competitive point of view make it likely that even larger com-

binations will yet take place. The trade has had before it the example of the magnitude achieved by the Canadian Wheat Pool, and competitive forces now at work may produce eventually trade organizations on as large a scale.

CHAPTER XIII

THE CANADIAN WHEAT POOL

IN accordance with popular usage we refer to the pool organizations as the Wheat Pool, though in fact each province is organized separately and the provincial organizations were originally named "The Alberta Co-operative Wheat Producers, Limited," "The Saskatchewan Co-operative Wheat Producers Limited," and "The Manitoba Wheat Producers Limited." For Alberta and Manitoba the names were changed at a later date to "The Alberta Pool" and "The Manitoba Pool." In the same way the central selling agency is the "Canadian Co-operative Wheat Producers, Limited." The elevators owned by the Pool are organized on provincial lines and with distinctive names. But by the public generally the whole interrelated organization is referred to as "The Pool."

Although the Pool at the present time is in very grave difficulties, no study of the structure of the Canadian grain trade would be complete without a survey of the really stupendous organization built up by the grain growers of western Canada. Despite its present position the Pool represents the most ambitious effort yet put forth by the western farmer in the field of producer control of marketing as well as the high water mark in achievement.¹

¹During the crop year of 1931-32 the three Provincial Pools are operating as separate entities. Signers of Pool contracts have the privilege of either pooling their wheat, or having it handled by their pool in the same way that it would be handled were it delivered to a private company. The central selling agency remains, but its transactions are limited to those connected with the 1929 and 1930 crops.

I. BASIC PRINCIPLES.

The pool structure as developed recognizes three basic considerations which grow partly out of the history of co-operative endeavour, partly out of the western Canadian environment, and partly out of the needs of business enterprise. The first necessity was the establishment, in accord with democratic and co-operative principles, of a stable business enterprise. The history of many co-operative enterprises has been one of success for a short time and then of disappearance, due to disintegration from within. There was a large measure of scepticism about the success of a pool at its inception. Many believed that such an organization would not last, but would prove only a flash in the pan produced by temporarily unfavourable conditions in the world's markets. The makers of the pool wished, as far as possible, to guard against this possibility and to build an organization that would endure.

Secondly, recognition had to be given to the individuality of provincial life. Although the prairie provinces lie side by side, each has gone its own way. The farmers' organizations have grown up upon provincial lines. Each province has its own farm organizations, its own farm leaders, and to a certain extent interests peculiar to itself. The province of Alberta looks westward to the Pacific route and to the Oriental market. Saskatchewan, the middle province, farthest from markets, is by far the largest producer. Manitoba, passing out of the picture as a large wheat producer, is nearer to the Winnipeg market and to the lake terminals. These and other factors made it necessary to pay heed to provincial lines in any scheme that sought to bring all the wheat producers within the scope of one organization.

Finally, it was felt there must be no sacrifice of unity in

executive direction or in singleness of action in the marketing of the producers' grain. The fundamental tenet at the base of the whole movement was the belief that competition in selling farmers' grain led to low prices. There was absolute unanimity of opinion among pool leaders and the rank and file that the ultimate disposal of the western wheat crop, as far as possible, must be placed in the hands of a single group of men if the organization was to be successful. From the very beginning the idea of a 100 per cent pool lay in the minds of many of the organizers, even if they recognized that this idea could not be immediately realized.

II. THE FIVE YEARS' CONTRACT.

The first aim of those in charge of organization was to gain the adhesion to the project of a sufficient number of wheat growers to secure control over a large portion of the western wheat crop and in addition to make certain that these farmers would continue to yield support until the scheme had had a reasonable chance to demonstrate its possibilities. Only upon such a foundation could a durable and substantial structure be attempted. The burden of promotion in its initial steps fell upon the farmers' societies, the United Farmers of Alberta, the Saskatchewan Grain Growers' Association, and the Farmers' Union of Saskatchewan, and the United Farmers of Manitoba. The provincial governments, when funds were needed, came to their aid with advances to carry on the work. These funds were later repaid.

The method of organization employed was to persuade the individual grain grower by the direct solicitation of volunteer canvassers to sign an iron-clad contract that he would deliver all his saleable wheat to the pool for a period of five years. In Alberta these contracts were to become

effective only if a given acreage of wheat lands was signed up. If this acreage should not be brought under contract, then a short period was allowed to signers during which they might withdraw. At the end of this period it was left to the discretion of the promoters whether there was a large enough area of wheat lands able to be brought under contract to warrant their declaring a pool in existence. With unimportant variations in procedure the same methods were employed in Saskatchewan and in Manitoba.

In order to secure signatures to the contract, local organizations were created at the different shipping points, and these organizations prosecuted an active canvass. By a section of the contract it was provided that the grower should contribute two dollars to defray the expenses of organization, to carry on field service and educational work. By this device the main expenses of the campaign for membership was met by those who joined the pool. The signing of the contract was purely voluntary on the part of the grower, but when once he signed, he was obliged to remain a member of the pool for the period named.

The Alberta Pool was declared in existence in September of 1923 with 2,602,797 acres of wheat land under contract. On October 9 it began operations. The Saskatchewan Pool did not reach its objective in acreage, 6,166,149, until July of 1924. The promoters of the Manitoba Pool aimed at securing contracts covering the wheat grown upon 1,000,000 acres, but decided to organize in March of 1924 when they had secured 711,579 acres. After formal organization each pool continued to canvass for contracts, and before the time came to market the crop of 1924 the total area of wheat land under contract to the pools exceeded ten million acres. Subsequent to the organization of the wheat pools, coarse grain pools were organized in Saskatchewan and Manitoba. In

1929 a coarse grain pool was organized in Alberta. Members of these pools are required to sign a wheat pool contract, but a wheat pool member is not obliged to sign a coarse grain contract.

The pools were incorporated under the provincial laws governing the organization of co-operative societies, each member acquired one share of the capital stock of the association of the par value of one dollar. The pool charters were later confirmed and their by-laws declared binding upon their members by special provincial legislation.

The pool contract with the individual grain grower is the instrument relied upon to give the pool power and stability and to assure to it a steady flow of wheat annually. The contract is an extensive document, containing 30 sections, which set out with great particularity and comprehensiveness the obligations of the signatory. The grower, "without power of revocation" contracts to deliver to the pool all the wheat produced or acquired by him for the years named, except registered seed wheat and his own seed and feed. He authorizes the pool:

"(a) To receive and take delivery of, handle, store, transport, market, sell and otherwise dispose of the wheat produced and delivered to it by the grower in whatsoever way and at such time and place as the Association shall in its judgment determine to be to the best advantage of all the growers who have executed this agreement, or an agreement similar in terms.

"(b) To mingle and mix the wheat received by the Association from any grower with wheat of like kind and grade delivered to the Association by other growers, and, in its discretion, clean, condition, blend or process the same, subject always to the laws for the time being governing the same.

"(c) To borrow money in the name of the Association and on its own account on the wheat delivered to it or on any warehouse or storage receipt or grain receipt or on any accounts for the sale thereof or on any drafts, bills of lading, bills of exchange, notes or acceptances, or on any commercial paper delivered therefor and to exercise all rights of ownership without limitation and to pledge in its name and on its own account such wheat or receipts or accounts or drafts, bills of lading, notes, acceptances, orders or other commercial paper as collateral therefor. The Association shall have the right to apply the money so received pro-rata among the growers who shall have executed this agreement and delivered wheat to it or to use the said moneys for any proper Association purpose or activity deemed by the Association to be in the best interests of its members.

"(d) To pay or retain and deduct from the gross returns from the sale of the wheat delivered to it by the growers the amount necessary to cover all brokerage, advertising, taxes, tolls, freights, elevator charges, legal expenses and all other proper charges such as salaries, fixed charges and general expenses of the Association and in addition, the Association may deduct such percentage, not exceeding one per cent (1%) of the gross selling price of the wheat as it shall deem desirable as a commercial reserve to be used for any of the purposes or activities of the Association.

"(e) To settle any and all claims for damages or otherwise which may occur in connection with the handling of the grower's wheat during transfer or otherwise or that may arise in connection with the exercise of any of the powers or authority herein granted.

"(f) To deduct from the gross returns from the sale of wheat handled by the Association for the growers who have executed this agreement or, upon first obtaining the consent in writing of any group of growers, a sum out of

each grower's proper proportion thereof not exceeding two cents (2c) per bushel and to invest the same, in the discretion of the Trustees of the Association, in shares of the capital stock of any company or association (formed or to be formed), whether promoted, owned or controlled by the association or not, which company or association is formed for the erection or acquisition by purchase, lease or otherwise of grain elevators and which company or association has entered into a contract or contracts with the Association to handle the wheat of its members under the control and direction of the Association, and for such purpose to apply for and enter into all necessary and incidental contracts on behalf of and in the name of the grower for the purchase of such shares of the capital stock of any such company.

"(g) To take exclusive possession and control of the grower's wheat crop and to harvest and market the same according to the terms of this agreement or at its option to take any legal action to obtain possession thereof or to have a receiver appointed with power to take exclusive possession and control of the said wheat crop and deliver the same to this Association as hereinbefore provided or otherwise to dispose of the same as a court having jurisdiction in that behalf may direct, in the event of the grower failing to fulfil on his part the provisions of this agreement or any of them or failing to deliver his wheat crop as herein provided. If possession of such wheat shall be taken by the Association by reason of such breach of contract on the part of the grower, the Association shall be entitled to retain out of the proceeds derived from the sale thereof, in addition to the sums heretofore provided for, all additional expenses incurred in connection therewith."

Other sections of the agreement provided that for certain breaches of the contract by the grower the Pool may go to the courts for an injunction or other equitable relief including specific performance. Should the grower fail to deliver all his wheat to the Pool, liquidated damages to the amount of

25 cents per bushel, is agreed upon for all wheat withheld or disposed of outside the contract. By by-law it is provided that disputes between the Pool and its members must be decided by arbitration. Thus, when a member of the Pool appealed to the courts to secure an accounting of funds, the action failed upon this ground.

On the other hand by the contract the Pool is given a free hand to shape its business policy. It agrees as soon as practicable after the delivery of wheat to it by the grower to make an advance to him "as in its discretion it shall deem proper" and from time to time to pay over to him, as funds become available, the proceeds from the sale of his crop less the handling charges and deductions agreed upon.

Equally wide latitude is given to the Pool with respect to the policy it may adopt in marketing the growers' wheat. "The Association may sell the said wheat to millers, brokers, or others, within or without this province, at such time and upon such conditions and terms as it may deem fair and advisable." The only restriction originally imposed was that there was no specific authority in the contract which would authorize the Pool to buy futures or hedge its holdings. The rank and file of the grain growers who signed the contract and thereby made the Pool a reality had always been distrustful of the market in futures. This distrust was reflected in the contract and the failure to give direct legal authorization to the Pool to make use of this marketing facility. Later, however, it was found desirable to repair this omission and the central selling agency is able to make use of the market in futures when it so desires. In fact, it has used it both as an avenue by which to make forward sales and also with a view to supporting the price of wheat.

What protection there is to the Pool member against reckless use of the power conferred upon the Pool by the

contract is in its nature political rather than legal. It does not rest upon the powers of the Pool member under his contract but by the legislative arrangements whereby he is able to influence the policy of the organization through the election of Pool delegates and through them the election of the Pool Board.

III. THE PROVINCIAL POOLS.

Each provincial pool is distinct and self-governing. While the general form of organization is similar in all three pools, there are differences in detail. In Alberta the Pool is governed by a board of seven members. For purposes of representation the province is divided into seven main districts and each of these districts is sub-divided into 10 sub-districts. Each main district is represented on the Board of Directors by one member. Each sub-district elects one representative to a body of delegates to which the Board of Directors reports annually and to which it is responsible. At some time during the annual meeting each group of 10 delegates for each of the seven main districts convenes separately and elects from among themselves or from the general membership in that district a director, subject to recall by the members, who serves for one year on the Board of Directors.

In Saskatchewan the province is divided into 16 main districts, each divided into 10 sub-districts as in Alberta. The Board of Directors consists of 16 members and the body of delegates of 160 members. In Saskatchewan as soon as the delegates are chosen, they meet within the district and appoint a director who serves for one year. He must be selected from the delegates from within his district. The idea of dividing the districts into sub-districts for the purpose of electing the delegates is to assure to the membership in

every section of the district their proper representation on the body of delegates. The election of delegates in Alberta and in Saskatchewan is conducted by mail ballot. In Saskatchewan the single transferable vote is used.

In Manitoba a slightly different method of election is employed. Manitoba is divided into seven districts, each of which contains a certain number of wheat pool locals. From these locals, on the basis of membership, are elected the delegates to represent the growers at the annual meeting. The body of delegates elected on this basis numbers approximately 250. The delegates from the districts elect the directors who must be elected as delegates from within their district.

While this arrangement insured that the directorates represented all parts of each province, it has carried with it the defect that stronger men in certain instances might have been chosen if the delegates had been free to select the ablest men within the Pool available from the province at large. It has meant that as long as a director could hold his support in his home district, he was sure of a seat on the provincial board, even if he were out of harmony with his fellow directors and out of sympathy with the policy being pursued by the majority of the board. Certain weaknesses in the Saskatchewan Pool board seem to have been due to this cause. At any rate, there has been ample evidence in connection with the agitation for a 100 per cent pool that the board has not always worked harmoniously together in this province.

IV. CENTRAL SELLING AGENCY.

The central selling agency combined the three provincial pools into a single unit for the purpose of marketing the wheat delivered to them by the pool members. This organ-

ization, officially called the Canadian Co-operative Wheat Producers Limited, is incorporated under federal law as a joint stock company. The authorized capital is \$150,000, and this stock is held by the three provincial pools in equal portions, with the exception of nine shares which are held individually by the directors. There are nine directors drawn from the executives of the provincial pools, three being appointed by each provincial pool.

Technically the relationship between the provincial pools and the central selling agency is one of contract. By the agreement between the central selling agency and each of the pools the field of activity is defined so that there shall not be any overlapping. The central selling agency took charges of:

- (1) Local sales (for delivery and use within the province).
- (2) Sales domestic and export.
- (3) Finance.
- (4) Transportation beyond terminal points.
- (5) Statistics and information.
- (6) Field service (supervising the provincial field service and supervising publicity).
- (7) Terminal elevator and warehouses (handling of problems of receiving grain outside the province).
- (8) Grading.
- (9) General counsel.
- (10) Office systems (creating systems for respective provincial offices for efficiency for audits).²

To the provincial pools fell the responsibility of maintaining and administering the departments concerned with:

²In practice the duties set forth above in 6, 7, and 10 were left to the provincial pools.

- (1) Field service (membership local publicity).
- (2) Elevators and warehouses (within the province).
- (3) Local counsel (enforcement of membership contracts).
- (4) Relations with elevators.
- (5) Office management (actual administration).
- (6) Transportation to terminals.

The creation of a central selling agency completed the original organization of the Wheat Pools. The whole structure was designed essentially to achieve the sale of the farmers' wheat. Little thought was given to the control of its physical handling. At the outset the pools did not go into the country elevator business but negotiated a contract with the elevator companies, who agreed to handle pool grain and deliver it at the terminals to the central selling agency which was charged with marketing it. In order, however, to share in the profits of mixing grain in the first year of its operation the central selling agency leased two small private terminal elevators at Fort William with a combined capacity of 870,000 bushels. In 1925 it increased its terminal space by the purchase at Port Arthur of a terminal elevator with a capacity of 1,500,000 bushels. During these years the balance of its shipments were handled through the public elevators at the lake ports.

V. POOL ELEVATORS.

A very short period of operation convinced the pools that if they were to operate successfully as a selling agency, they must put themselves in a position where they could control pool grain from the time it left the farmer's wagon. This was necessary in order that the central selling agency could put wheat into a saleable position whenever and wherever it saw fit. "Our grain being handled as it was by



line companies through their elevators, this was in many cases impossible, as, at a time when the pool selling agency might want a certain grade of grain shipped forward in order to take advantage of an existing premium, the private grain interests would very likely want the same grade of grain shipped forward so they could secure this premium. As a consequence the pool rarely got delivery of its wheat just as it was wanted but more often got deliveries of certain grades just when those grades were most unsaleable."³

As a result of this experience the next step in the development of the pools was the creation by construction, purchase, and lease of an extensive line of country elevators with adequate terminal facilities. To procure and administer elevator facilities three joint stock companies were incorporated. The charter names of these companies were the Alberta, the Saskatchewan, and the Manitoba Pool Elevators Limited, respectively. These companies were subsidiary to the provincial pools in each province, being placed under the pool board of directors. Otherwise, each company had its distinct staff and organization while its legal relationship to the parent body was based on contract.

In Alberta and Saskatchewan the companies were centralized with respect to the ownership and control of the elevator facilities. The provincial pools held the capital stock in the companies and provided the necessary funds from their elevator reserves. In these two provinces pool members were not required to deliver their grain to a pool elevator, even though one might be easily accessible and by the terms of the grower's contract could be required to do so. A pool member could deliver to any elevator under agreement to handle pool grain. In Saskatchewan the pool elevators operate as public country elevators and under the

³Mahoney.—*Proceedings of the Second International Co-operative Wheat Pool Conference*, p. 116

Canada Grain Act are required to handle pool and non-pool grain without discrimination. In Alberta the Alberta Pools Limited operated its country houses as private elevators and handled only pool grain, except at shipping points where the pool elevator was the only one in operation. At these points they were required to operate as country public elevators. Where non-pool grain was handled by the pool elevators, it was shipped to a terminal, where it was turned over to a commission house for sale purposes.

In Manitoba a somewhat different type of organization covering the country elevators was evolved. At each shipping point where contract signers representing at least 7,000 acres of grain land desired a pool elevator, they formed a local association, which was incorporated under the Manitoba Co-operative Act. The pool member who joins such a local association is required to sign both wheat and coarse grain contracts and to have his contract run for five years from the date of the opening of the local pool elevator. He must also agree to ship all his grain through this pool elevator for this period. An elevator is then constructed or purchased by the Manitoba Pool Elevators Limited. The local association agrees to pay to the company upon its investment in it the costs of operation, deducted from the settlements, with depreciation figured at 10 per cent plus interest at 7 per cent. In return, at the end of 10 years the title to the elevator will pass to the local association and ownership will accrue to the members thereof on the basis of the total amount of grain they have delivered to it during the course of the 10 years. Each local pool association receives a pro rata share in surplus earnings derived from the operation of the company's terminals. This share is based on its actual deliveries.

As a result of the entrance into the elevator field of the

provincial pools, the central selling agency withdrew from the operation of terminals, and all the pool terminals are now under the control of the provincial pool subsidiaries. The result gave a logical structure to the pool organization as a whole. At the same time the fundamental considerations which weighed with the founders of the pool were all given weight. At the base of the structure lay the iron-clad five-year contract to give stability. The necessity of recognizing provincial affiliations was met by making the provincial pools autonomous and charging them with responsibility for membership and the handling of the grain until it reaches terminal points. Centralization was achieved by placing upon the central selling agency, representing the three pools, the final responsibility of marketing the pool member's grain. As a necessary means of successfully discharging this responsibility, the right of directing the flow of grain from the country points to the terminals rested with the central selling agency. This right became of particular importance along the dividing line between the provinces of Alberta and Saskatchewan, where at some seasons of the year it may be desirable to direct the shipments to the head of the Lakes and at other times to the port of Vancouver.

VI. MAGNITUDE OF THE POOL.

The first contracts signed by pool members expired July 7 of 1928 and second sign-up canvass was conducted. This canvass proved even more successful than the first, and it is under the contracts signed at that time that the pool at present operates. With slight changes the contracts repeated the provisions embodied in those originally signed. On May 1 of 1930 the Alberta Pool reported a membership in the wheat pool of 42,290 with 4,751,943 acres under contract. The pool for coarse grains reported 5,571 members

with 309,769 acres under contract. For the same date the membership in the Saskatchewan Pool was placed at 182,231 with an acreage under contract of 9,534,224. Coarse grain contracts numbered 44,401, covering a total of 796,024 acres. The Manitoba Pool reports a membership of 18,093, representing 1,360,405 acres of wheat land, and 19,184 coarse grain pool members with 1,880,752 acres of land devoted to coarse grains. This gives a total membership in the wheat pool of 242,614 with 15,646,522 acres of wheat land and 69,156 members in the coarse grain pool having 2,986,545 acres. It is estimated that the pool membership represents 55.5 per cent. of the farms in the three prairie provinces. The Alberta Pool Elevators Limited has 439 country elevators. In 1926 the Saskatchewan Pool acquired by purchase the facilities of the Saskatchewan Co-operative Elevator Company. This included over 400 country elevators. The Saskatchewan Pool Elevators Limited added rapidly to this number and now owns 1,061 country elevators. The Manitoba Pool has now 155 country elevators. This makes a grand total of 1,655 pool elevators at local shipping points with a capacity of 58,000,000 bushels. This is almost one-third of the entire country elevator capacity in western Canada.

The provincial pools through their elevator companies now operate 11 terminal elevators, which have a total capacity of 35,955,660 bushels. The Manitoba Pool controls two terminal elevators at Port Arthur with a combined capacity of 2,675,000 bushels and one small house, with a capacity of 130,450 bushels at St. Boniface across the river from Winnipeg. The Saskatchewan Pool has four terminals at Port Arthur and one at Fort William, with a total capacity of 25,467,210 bushels. The terminals of the Alberta Pool are on the Pacific coast. It operates under lease the

terminal elevator of the Dominion Government situated at Prince Rupert. It has also under lease from the Board of Harbour Commissioners a terminal elevator at Vancouver. In addition, it has constructed a terminal of its own at Vancouver with a capacity of 5,150,000 bushels, and has a lease on the terminal at Victoria. This gives it terminal facilities with a total capacity of 9,058,000 bushels. The pools now control 33 per cent of the total terminal space at Port Arthur and Fort William and 45 per cent of the total terminal space at Vancouver. The purchase of the Saskatchewan Co-operative Elevator Company brought to the Pool a transfer house which the former company had built at Buffalo, N.Y., to facilitate its shipments through American ports. This elevator with a capacity of two million bushels was operated by the central selling agency for one year and then taken over by the Saskatchewan Pool Terminals.

The last step in the organization of the Pool was the formation of a company subsidiary to the central selling agency to handle its insurance business. This company, named the Canadian Pool Agencies Limited, writes lake marine, outturn, winter storage, marine, and fire insurance. It also executes fidelity bonds. Its first statement of operations from the inception of the company in 1928 to August 31 of 1929 reported net earnings amounting to \$102,044.91 after meeting administration and general expenses.

The detailed figures covering the operations of the Pool are those relating to the exceptionally large crop harvested in 1928. As a result the volume of handling was considerably larger for that year than any other year since the Pool began operations. However, the percentage of the crop handled by the Pool has remained steady. For the crop year of 1928-29 the pools handled 51.3 per cent of the total deliveries at country points in the three western provinces.

For the crop year of 1925-26 the pools handled 52.2 per cent; in 1926-27, 53.1 per cent and in 1927-28, 51.1 per cent. The receipts of wheat by the three provincial pools for the crop year of 1928-29 were as follows: Manitoba, 18,338,115 bushels; Saskatchewan, 158,422,620 bushels, and Alberta, 67,168,756 bushels.

For the same period the central selling agency sold 202,744,000 bushels of wheat and carried over 48,358,585 bushels. Deliveries to the central agency from the coarse grain pools amounted to 11,440,970 bushels of oats, 19,752,164 bushels of barley, 1,486,642 bushels of flax and 3,014,281 bushels of rye. Apart from barley, in which a small export business was done, sales in the coarse grain department were almost entirely made in the domestic market. The carry-over of coarse grains was approximately 12 per cent of the total handlings.

VII. METHODS OF FINANCE.

On account of the fact that the pool originally was created for the single purpose of selling wheat and at the outset left the business of country and terminal handling to the established elevator companies, the first step after organization was to secure the necessary funds to finance sales. The plan of operations included a first payment to the pool member at the time that he delivered his wheat to the country elevator, with subsequent payment as the wheat was sold. What was needed was a revolving fund based on the magnitude of the pool's operations. Since wheat, when once it is stored in an elevator, does not deteriorate easily and can be protected against fire by insurance, it is an excellent commodity upon which a bank can extend credit. It was to the chartered banks, therefore, that the trustees

of the Alberta pool, the first to be declared in existence, turned for financial assistance to carry out their scheme.

They approached the western section of the Canadian Bankers' Association. The bankers, after considerable discussion, agreed to extend to the Pool a line of credit up to \$15,000,000 at 6½ per cent, (reduced later to 6 per cent), on the security of terminal warehouse receipts, with an initial payment of 75 cents a bushel No. 1 Northern basis, Fort William, when the wheat was delivered at country points. The Pool felt that a margin of 15 per cent should be maintained at all times between the current market price of wheat and the initial payment. At the same time the Pool trustees did not feel that it would be desirable to vary the amount of the initial payment in the event of prices on the market falling at some period during the season. To safeguard its margin the Pool approached the government of Alberta and obtained from it a guarantee up to \$250,000, which, however, as it turned out, it was not required to implement. Where grain on behalf of the Pool was received by country elevator companies, the latter financed the initial payment and carried it until the wheat was delivered at the terminals. With these financial arrangements the Alberta Pool began business.

Deliveries to the Pool in its first season amounted to 34,218,980 bushels of wheat. By the terms of the grower's contract, after meeting all the expenses of administration, the Pool was authorized to deduct from the grower's settlement one per cent of the net Fort William price of the grain sold, for the purpose of forming a commercial reserve, and two cents a bushel in addition for the purpose of acquiring elevators. During the first year of operations payments into the commercial reserve amounted to \$211,581. No deduc-

tions, for the purpose of acquiring elevators, were made by the Alberta Pool the first year of its operations.

For the year 1924-25, with the decision to enter upon the business of handling grain, deductions for an elevator reserve were made by each of the provincial pools. In Alberta the deduction amounted to \$422,166, in Saskatchewan to \$958,238, and in Manitoba to \$159,579. With this nest egg the pools were able to embark upon their policy of constructing or acquiring elevators by purchase. With the proceeds from the elevator reserve for the first year of operation the Saskatchewan Pool constructed or purchased outright 90 country elevators. In 1926 the Saskatchewan Pool purchased the facilities of the Saskatchewan Co-Operative Elevator Company, Limited, at an arbitrated price of \$11,059,310. Under the terms of the agreement the pool is to complete payment within seven years, the money to be obtained from the elevator reserve.

The commercial reserve has been used for various purposes. Part of it has been loaned to the subsidiaries operating the pool elevators to assist them in developing their lines. It has also been available for financing the operations of the central selling agency. The total elevator reserves of the three pools at the end of the 1928-29 crop year was \$19,216,654.71 distributed among the three pools as follows: Alberta, \$4,996,558.43; Saskatchewan, \$12,195,486.73; Manitoba, \$2,024,608.55. The total commercial reserves at the same date amounted to \$10,016,499.13, distributed among the three pools as follows: Alberta, \$2,423,970.69; Saskatchewan, \$6,572,705.99; Manitoba, \$1,019,822.45. The combined elevator and commercial reserves of the three pools thus amount to \$29,233,153.84.

These reserves represent the capital investment of pool members in elevator facilities. Statements are forwarded

annually showing to each member the total of his deductions, which bears interest at the rate of 6 per cent. During 1929 each of the provincial pools made a distribution of interest to its members. That by Alberta amounted to \$517,000; by Saskatchewan to \$533,592, and by Manitoba, \$264,235. The distributions by Alberta and Manitoba represented the accumulation of several years' interest. The elevator subsidiary companies of the Alberta and Saskatchewan Pools operate along the same lines as do the other elevator companies. The tariff of charges for handling grain is that approved by the Board of Grain Commissioners under the Canada Grain Act. By the terms of their agreement with the central selling agency the companies made the initial payment to the farmer when he delivered his grain and employed bank credit to finance these payments. On street grain the initial payment was made on a fixed spread below track grain. When the grain that the Pool Elevators received was delivered at a designated terminal and warehouse receipts for the same had been turned over to the central selling agency, the latter reimbursed the pool elevator companies to the extent of the advances they had made. They were then in a position to repay the banks. On the security of the warehouse receipts the central selling agency financed its own operations. Bank credit was secured by it through a joint arrangement which included seven principal Canadian banks.

Because of the volume of business which they handled during the heavy crop years the pool elevator companies showed handsome profits. These were employed to pay interest upon the pool members' investment. In addition, the pool elevator companies of Alberta and Saskatchewan paid patronage dividends to pool members. The scale of payments in Alberta was one cent per bushel on all pool wheat

WHEAT POOL PAYMENTS (Wheat Only)

Basis No. 1 Northern—Fort William

CROP YEAR PROVINCE	INITIAL PAYMENT		FIRST INTERIM PAYMENT	
	Per Bushel	Amount Distributed	Per Bushel	Amount Distributed
1923-4 Alberta	\$ 75	\$ 24,366,040 24	\$.10	March 15, 1924 3,009,620 74
1924-5 Alberta		21,615,669 14		March 10, 1925 7,228,768 14
Saskatchewan	1 00	46,877,869 89	.35	16,619,513 25
Manitoba		7,239,766 50		2,777,745 21
		75,733,305 53		26,626,026 60
1925-6 Alberta		41,109,727 42		March 10, 1926 8,333,710 94
Saskatchewan	1 00	125,003,999 72	.20	24,594,292 85
Manitoba		10,650,111 06		2,378,540 06
		176,771,838 20		35,306,543 85
1926-7 Alberta		37,122,527 73		March 9, 1927 6,107,217 09
Saskatchewan	1 00	109,766,245 69	.15	16,957,229 05
Manitoba		14,089,576 60		2,535,581 46
		150,978,350 22		25,600,027 60
1927-8 Alberta		61,006,339 47		March 10, 1928 8,746,289 60
Saskatchewan	1 00	110,155,130 67	.15	17,597,067 00
Manitoba		9,738,058 90		1,600,497 21
		180,899,521 04		27,943,853 81
1928-9 Alberta		45,601,076 05		March 1, 1929 6,827,276 18
Saskatchewan	.85	109,999,718 42	.12	17,499,433 34
Manitoba		13,202,478 80		2,119,456 48
		168,803,273 27		26,446,166 00
1929-30 Alberta	1 00*	31,937,184 84	*Reduced to 85 cents June 25th, 1930.	
Saskatchewan		74,475,196 26		
Manitoba		8,988,684 39		
		115,401,065 49		

Sums paid to Pool members on account of
coarse grains delivered—by years.

1926-27	\$15,946,356 82
1927-28	14,004,667 75
1928-29	21,149,659 88
1929-30	10,280,085 67

WHEAT POOL PAYMENTS (Wheat Only)

Basis No. 1 Northern—Fort William

SECOND INTERIM PAYMENT		FINAL PAYMENT (inc. reserve fund deductions)		TOTAL PAYMENT	
Per Bushel	Amount Distributed	Per Bushel	Amount Distributed	Per bus. incl. reserve fund deductions	Amount Distributed
		\$ 16	July 31, 1924 \$ 5,564,305 74	\$1 01	\$ 32,939,968 72
	July 26, 1925		Sept. 5, 1925		
	\$ 4,338,313.27		1,149,160 64		34,331,911.10
.20	9,403,774.60	.11	4,120,085.29	1 66	77,021,243 03
	1,494,628 82		533,662.04		12,045,800.57
	15,236,714.69		5,802,907 97		123,398,954.79
	July 26, 1926		Oct. 15, 1926		
	9,028,133.74		954,245.89		59,425,822.99
.20	25,882,748.22	.05	6,146,685.28	1 45	181,628,724.07
	2,464,508 98		390,102.20		15,891,259.30
	37,375,390.94		7,490,033.37		256,943,806.36
	July 25, 1927		Oct. 19, 1927		
	8,481,198 58		2,653,966.24		52,364,909 84
.15	17,960,105.70	.12	12,929,326.72	1 42	157,612,907.16
	2,734,910.78		1,429,151.30		20,789,220.34
	27,176,215.06		17,012,444.26		230,767,037.14
	July 28, 1928		Oct. 10, 1928		
	9,245,603.56		1,955,645.28		80,953,877.91
.25	22,096,600.96	02¼	2,870,320.00	1 42¼	152,719,618.63
	1,712,341.46		251,873.63		13,302,763.20
	33,054,545.98		5,078,338.91		246,976,259.74
	July 31, 1929				
	8,127,377 30				60,555,729.53
.21½	25,941,414.17			1.18½	153,440,565.93
	2,857,313.88				18,179,249.16
	36,926,105 25				232,175,544.62
				1.00*	31,937,184 84
					74,475,196.26
					8,988,684.39
					116,401,065.49

Total distribution of net proceeds to Pool members—1923-4 to 1929-30.

Wheat.....\$1,238,602,634.86

Coarse Grains.....61,380,770.12

TOTAL.....\$1,299,983,404.98

delivered to country or terminal elevators controlled or operated by the pool as well as on any platform shipments of wheat; also one cent per bushel on all coarse grains delivered by pool members to pool country elevators on street basis. In Saskatchewan the basis was $\frac{3}{4}$ cent per bushel on all pool grain handled through pool elevators, and one-half cent per bushel on all pool grain loaded over the platform and billed to pool terminals or loaded through line elevators and billed to pool terminals. Under the Manitoba plan of organization the surplus was returned to the local associations for distribution among the pool membership upon the basis of patronage.

The statement on the preceding pages of payments made to Pool members reveals at a glance the scale of the Pool's marketing operations from its beginning in the autumn of 1923 up to the crop of 1929, which is not yet entirely liquidated.

As a business venture the Pool enjoyed really great success until 1929 and was happy in holding to a remarkable degree the loyalty of its members. Through its service departments it spared no pains to keep the rank and file informed of its progress and to satisfy individual complaints with respect to the handling of shipments. To assist it in formulating its business policy the management of the central selling agency established statistical and research departments. A representative was maintained at Buenos Aires to give correct information upon Argentine crops, market conditions and stocks. In the best sense of the term its management was progressive, though in one particular it appears to have been open to criticism: by reason of its deductions it built up very large reserves, but it failed to keep these reserves in a sufficiently liquid condition against an hour of need. Large sums were invested in the elevator equipment of the Pools and in certain instances it is doubt-

ful whether this rapid expansion could be justified apart altogether from the fact that it entailed tying up the reserves to too great an extent.

Fixing the initial payment for the crop of 1929 at too high a figure, apparently safe at the time, produced the crisis with which the Pool has been labouring ever since.⁴ As a result it is unlikely that it will be able to regain its position in the grain trade of Canada in its original form. To do so it must surmount at least three difficulties. In the first place, it must make satisfactory arrangements with the three provincial governments in connection with the heavy advances made to it in connection with the 1929 crop. Secondly, it must negotiate a line of credit with the banks that would enable it to make reasonable initial payments to its members when the grain is delivered. With the lower price levels for wheat and in view of the difficulties of the last two years, it is not unlikely that the banks might require a wider margin than they have previously insisted upon. A wider margin might reduce the initial payment possible to a degree which would bear hardly upon the pool members. Finally, in order to survive in its original form it must within a short time sign up its membership for another five years. There is evidence that many members of the Pool have been profoundly disappointed with the course of events, and there seems to be little doubt that this feeling would react injuriously upon the Pool in the event of another sign-up being decided upon. The first and second difficulties mentioned are not insuperable; the third is most serious. When all these factors are considered, it seems clear that some changes in organization and policy will have to be made. These changes are now in process of being worked out. It should be clearly under-

⁴On August 15 of 1929, when the initial payment of \$1.00 per bushel on No. 1 Northern Wheat became effective, the Fort William price for this grade was \$1.56%.

stood, however, that there remains a large group of grain growers devotedly loyal to the Pool, and anxious to see it back on a solid foundation.

One aspect of the Pool's policy was made the subject of very sharp criticism by many who were not in the main unfriendly to the Pool. The Pool established agencies in Great Britain and Europe for the purpose of selling Canadian wheat and coarse grains direct to the miller and manufacturer. As a result, the Pool, not unnaturally, incurred the bitter hostility of firmly entrenched grain-marketing interests. It has been alleged that these interests, as a result, became active in endeavouring to widen the market in Great Britain and on the continent for wheat grown in the Argentine and in other grain-exporting countries to the detriment of Canada. It is probably true that British traders in wheat sought other sources of supply on account of the action of the Pool and thus made the competition keener for Canadian wheat. But on behalf of the Pool, it is stated that the international grain trade is dominated by two or three large concerns and the difficulty of finding agents in Great Britain and on the continent apart from these competitors had much to do with the initiation of the Pool's policy. It is also claimed that the policy of the Pool was welcomed by the millers, the real customers for Canadian wheat, who preferred a direct dealing with principals than through intermediate trades. At any rate, the policy of the Pool was in accord with the present tendency in marketing of reducing costs by reducing the number of hands through which a commodity passes between producer and consumer.

A more valid ground for criticism is found in statements emanating from various Pool officials and elsewhere that Canadian wheat was being withheld from the market in order to secure a higher price. These statements were seized upon by the trade in the United Kingdom and Europe and

by publicists to give the impression that Canada was endeavouring to exploit the foreign consumer. Later, the activities of the United States Farm Board to stabilize wheat prices appear to have become linked in the imagination of many with the efforts of the Canadian Pool. The general effect was to create a sense of insecurity in Europe in regard to food supplies and a feeling of resentment that was decidedly harmful to Canada. Incidentally it revealed a weakness in the Pool organization: the Pool on account of the number of its individual members was compelled to make public for their information its general policy in a way that would not have been necessary by a private trader. This enabled enemies to put the Pool very much into the spotlight at a time when silence and lack of publicity would have served it much better.

The grain growers of western Canada have behind them 25 years of constructive effort in the field of co-operative marketing. In spite of present difficulties there is no likelihood that they will withdraw from the grain trade. The co-operative movement has educated the grain grower in the technical problems connected with handling and marketing grain, and developed leaders of ability who have also served the country in high political office. In the grain marketing field enterprises owned by the producers compete with the established trade. The effect of this competition is to hold profits at competitive levels and to stimulate advances in technical efficiency. If the co-operative movement in grain marketing in western Canada were to collapse it is likely that there would arise widespread demands for government ownership of all terminals and for a centralized marketing board.⁵

⁵For a careful study of the Pool at the height of its power, see Patton, H. S. *Grain Growers' Co-operation in Western Canada*, Cambridge, Mass., 1928.

CHAPTER XIV

FINANCING THE GRAIN TRADE:

THE financing of the western grain crop from the time it leaves the farmer's hands until it reaches the foreign buyer is one of the largest operations that devolves annually upon the Canadian chartered banks. It has been estimated that at the peak of the load the banks in certain years must extend credit to the grain trade up to at least two hundred million dollars. The magnitude of this task has been recognized by all public men. Safeguarding the concession by imposing a tax upon the additional issue, parliament has inserted special provisions in the Canada Bank Act which enable the banks to marshall additional resources in order to meet the needs of the situation without creating a general condition of strain in the field of credit. The Bank Act provides that during the stress of the crop-moving season, from September the first until the beginning of March, chartered banks may issue excess circulation up to 15 per cent. of their paid-up capital and reserves. The total paid-up capital and reserves of the ten chartered banks amount to slightly over \$310,000,000, so that by this concession there is made available to them a taxed issue of bank notes amounting to \$46,500,000 in excess of their normal issue based on paid-up capital.

Apart from this special provision, in no particular does the branch bank system characteristic of Canadian banking display itself to better advantage than in financing the grain crop. The wide-spread organization of the banks, extending

from coast to coast, enables all the surplus banking resources of the country to be concentrated in the west at the time that is especially needed there without the intervention, as in the United States, of commercial paper or discount houses. The location of branch banks in every town and large village in western Canada makes the distribution of funds comparatively easy, and takes away from the country elevator companies the burden and risk of placing supplies of ready money in the possession of their elevator agents. To the farmer convenient banking facilities mean that as soon as he places his grain in a country elevator he may obtain ready money without delay, either by sale or by taking an advance upon his grain. The branch banking system eliminates the local discount agent.

But although the important services of the Canadian chartered banks to the Canadian grain trade are often overlooked, because they are taken as a matter of course, it is equally important to observe that the business furnished to the banks by the grain trade, having regard to volume, is one of the most lucrative that they enjoy. Lending bank credit upon the security of warehoused grain is one of the safest modes of banking. The quality of the commodity upon which the loan is based can be determined with accuracy. Grain in good condition when placed in an elevator does not deteriorate easily, it can be protected against loss by fire insurance, and its market value as a saleable commodity is registered daily by the operations of the Grain Exchange. Where the loan is based on warehouse receipts, the bank possesses a highly liquid form of security.

There have been a few instances of serious losses occurring to the banks through failures in the grain trade. These failures as a rule have involved fraud. But, if the total volume of losses suffered be compared with the total

credits carried, the percentage would be found to be, while not negligible, at least very small. Credit operations in the grain trade, indeed, afford a favourite example of classical banking theory: the loan of present funds upon the security of a stable commodity on its way to its ultimate market.

If the grain trade did not exist, the fact would be reflected so far as the banks are concerned, not only by the diminished magnitude of their business, but also by the diminished volume of their annual net earnings. The banks and the grain trade are reciprocally advantageous to each other. The competition for the accounts of the various grain companies between the different chartered banks is very keen. Leaders in the grain trade who are also bank directors are valued, not only for the judgment and ability they display as members of the board they sit upon, but also because they draw to these institutions very valuable business.

I. LOANS TO COUNTRY ELEVATOR COMPANIES.

The banks lend money to companies engaged in the grain trade under the powers granted to them by sections 86 to 90 of the Canada Bank Act. Section 86 authorizes them to acquire and hold warehouse receipts and bills of lading as collateral security for loans made by them or where they finance the requirements of a dealer. Warehouse receipts and bills of lading so acquired vest in the bank equitable right and title to the goods covered thereby. Section 88 gives authority to the banks to make loans to any wholesale purchaser or dealer in the products of agriculture and to farmers upon the security of such products, and provides that by virtue of such security banks acquire the same rights and powers in respect of the products as they would have were the loans based on the acquisition of warehouse receipts, except that wages

owing for a period not exceeding three months are a charge prior to the claims of the banks.

An amendment to the Bank Act in 1923 (Section 88a) imposes upon any person intending to give a bank security under Section 88 the duty of giving notice of such intention by registering notice at the office of the Assistant Receiver General for Canada in the province where the borrower's principal place of business is situated. Schedules to the Bank Act set forth forms by which the security may be taken and the intention to give security registered.

The powers conferred upon the banks under Section 88 apply especially to loans made to country elevator companies to finance purchases of grain. At the beginning of the crop-moving season the companies negotiate lines of credit with their banks according to their individual needs. These lines of credit range from \$50,000 to \$10,000,000. In certain instances, where the amount is very large, the account may be carried by two or more banks, but this is an unusual procedure, for the larger banks are strong enough to carry such an account without aid and prefer to have the whole business to themselves. The basis upon which the line of credit is fixed is the financial standing of the company, determined by statements submitted and the magnitude of its operations. At the time the credit is arranged the bank does not take any form of security from the grain company. Security is taken only when the customer actually begins to make use of his credit by borrowing from the bank. Usually it is only as the company exhausts its own liquid reserves that it has recourse to the bank.

When a country elevator wishes to borrow on the security of its own purchases before the funds for which it has made arrangement can become available, it must execute three

instruments and deposit them with the bank. The three documents are known as the Application, the Agreement, giving power of sale, etc., to the bank, and the form of security or pledge.

The Application is a general comprehensive agreement, which contains a formal request for advances, gives an undertaking to furnish security for any advances made and interest in the shape of warehouse receipts, bills of lading, pledge of grain, or other security provided for by the Bank Act, and sets forth the terms under which the loan is granted. The grain to be covered by the security is described as exactly as possible, and it is provided that the security shall cover it where it is, is intended to be or in transit thereto or therefrom. The powers of the bank to deal with the grain covered by the security and the obligations of the borrower are set forth at length. These provisions are designed to safeguard the bank fully at every point. The bank has the power to sell the grain at any time, either before or after default. In the event of the borrower failing to keep the grain fully insured the bank may effect insurance and add the premium paid with 7 per cent interest to the amount secured. Should it be necessary for the bank to surrender to the borrower any bills of lading or warehouse receipts to enable the latter to obtain possession of any grain covered thereby, the borrower receives possession of the grain as a bailee for and on behalf of the bank. If grain be removed with the consent of the bank and other grain of substantially the same character and of the same value be substituted, the borrower after such substitution agrees to give warehouse receipts, bills of lading, or other security under the Bank Act to cover such substituted goods.

The Application covers credit for a specific period, and does not require renewal during the currency of such period

unless, meantime, borrowings have been temporarily repaid in full. Part payment or reduction in borrowings do not necessitate renewal of the Application for Credit. An increase in the original credit necessitates new forms.

When the grain is owned by the elevator company and is stored in its own country elevators, the company is not in a position to give the bank warehouse receipts or bills of lading as security. In these circumstances it gives a security in the form set forth in Schedule C of the Bank Act. This form, after giving the amount of the advance, and listing the bills or notes discounted by the borrower and stating the quality, quantity and location of the grain, declares that this grain is assigned to the bank as security for the advances named, that it is now in the possession of the borrower and is free from any mortgage, lien, or charge. This document is known as the Security.

The third document is a special promissory note which the company presents for discount. A number of bills or promissory notes may be discounted at one time to make up a given amount and may be listed on a single security form, but in every instance when a loan is made security is taken. With the execution of the Application, the Security, and a promissory note or notes, the technical requirements of the bank have been fulfilled, and in accordance with the general arrangements providing for a line of credit the funds desired are placed at the disposal of the company. Normally, banks loan up to 90 per cent of the value of the grain.

Instead of selling his grain outright to the country elevator company the farmer very frequently stores his grain in the elevator or has it dispatched to the terminal, and takes an advance upon its security until such time as he desires to sell. The country elevator company makes this loan to

the farmer. The farmer surrenders his elevator receipts to the company and at the same time signs an hypothecation of his grain, which gives the elevator company full power to dispose of the same if it considers the advance it has made to be imperilled by a fall in its value or by the trend of the market.

In practice the elevator company does not hypothecate storage receipts covering grain on which they have advanced money to the farmer. Bank advances to elevator companies for this purpose are linked by the registered assignment of book debts given by the elevator companies to the banks. The banks have the right, if they consider it advisable, to call upon the elevator companies to pledge the relative advance order forms signed by the farmer to which are attached the relative storage receipts, but this cumbersome procedure would only be adopted in exceptional circumstances.

An hypothecation details the quantity, quality, and location of the grain in consideration and states the amount of advances made thereon to the farmer. It provides for the insurance of the grain and authorizes the sale if this is necessary to protect the advances made upon its security. By bank loans the elevator company is able to continue to make advances to the grower as he delivers his grain at country points without the latter being compelled to sell his grain as delivered. If the grain is moved out of the country elevator to the terminal point, the bank may take up the bill of lading and when this is surrendered receive in exchange the terminal warehouse receipt. By this method the bank is able continuously to cover its loan with the security. However, the banks do not always take up the rail bills of lading, but rely on the Section 88 security, carrying the risk of the hiatus which occurs between the time the

grain is unloaded into the terminal and the terminal receipts are available.

The extinguishment of bank credits to the country elevator companies normally occurs when the grain which is the basis of them is sold. As the elevator companies sell the grain they deliver terminal receipts to the purchasers in exchange for cash, with which the bank advances are retired. This completes the cycle of financing for country elevator companies. When the country elevator company and the terminal elevator company, though legally separate, are under the same financial control, the procedure outlined above may vary somewhat. Thus, when the grain reaches the terminal, that company may reimburse the country elevator company for the advances it has made. This will enable the country elevator company to clean up with the bank its loans based on this grain. The terminal elevator company can then obtain a loan from the bank on the security of the warehouse receipts. As we have already seen, this was the procedure followed by the Pool.

II. LOANS ON GRAIN IN TERMINAL ELEVATORS.

Except in the case of companies licensed to operate private terminal elevators, which are permitted only to warehouse grain owned by themselves, and which borrow on the security provided by Schedule C of the Bank Act under Section 88, the warehouse receipt is the only document by which security for loans can be given upon grain stored in terminal elevators.

The warehouse receipt issued by a terminal elevator company for grain stored with it is a unique document, which has evolved with the evolution of government regulation of such elevators. Originally terminal warehouse receipts were issued only by public terminal elevator companies on the

receipt of grain. At the instance of the banks, who desired to further safeguard themselves by having these receipts authenticated, a partial system of registration was begun, about 1908, under the supervision of the secretary of the North-West Grain Dealers' Association. On account of certain conditions developing in the terminal elevators the Department of Trade and Commerce, acting through the Warehouse Commissioner at Winnipeg, caused an investigation to be made in connection with the official returns made by these companies. This investigation resulted in three companies being fined for filing irregular returns. This gave the banks cause for alarm. As a result, the Winnipeg Grain Exchange recommended that warehouse receipts should be registered inward and outward and that the service should be placed under the control of the Lake Shippers' Clearance Association. This suggestion was adopted, and the Lake Shippers' Association was appointed official registrar. Steps were taken to secure an amendment to the Manitoba Grain Act which would make such registration compulsory. The cost of the service was met partly by fees and partly by a grant of \$5,000 per annum from the Department of Trade and Commerce.

When the Canada Grain Act of 1912 was passed, it placed the registration of warehouse receipts under the Board of Grain Commissioners, who appointed a registrar. The public terminal elevator companies at that time were practically the only companies in the field, and the receipts issued were for grain received by them to be held at the disposal of the person storing it. About 1917 the private terminal elevator companies received recognition by an order-in-council and began to be an important factor at Fort William and Port Arthur. These elevators stored their own grain, but they could also, on consent being obtained from the shipper,

store other people's grain. The owners of certain of the larger private terminal elevators wished to be able to issue warehouse receipts so that grain placed in their houses might be deliverable on contracts in futures. There were certain difficulties to be overcome. Much of the grain in these elevators was owned by the owners of the elevator, and the issuance of a warehouse receipt for this grain would involve issuing a warehouse receipt by the owner to himself. Moreover, the advantage of a private terminal elevator over a public terminal elevator was that it was permissible to mix grades therein. Hence grain of a certain grade might be duly weighed and graded into the elevator, but it might disappear as a result of mixing operations. In the event of a financial collapse, the holder of the warehouse receipt might find no grain in the elevator corresponding to the particular grade called for by his receipt.

The solution agreed upon to meet these problems was that the Board of Grain Commissioners should register both inward and outward warehouse receipts issued by private terminal elevators with respect to quantity only. The Winnipeg Grain Exchange accepted the responsibility of registering these receipts with respect to grades. In effect it guaranteed the grades. Private terminal elevators, like public terminal elevators, were bonded by the Board of Grain Commissioners at eight cents per bushel, based on the capacity of the elevator. On the same basis the Exchange, to protect itself, imposed an additional bond of 15 cents per bushel. After mixing stocks of grain in its elevator the private terminal company could take warehouse receipts to the registrar of the Grain Exchange and have them replaced by receipts showing the grade made by mixing. They would then be taken to the registrar of the Board of Grain Commissioners, where the old receipts would be finally cancelled and

the new ones registered with respect to weight. By the rules of the Board of Grain Commissioners both public and private terminal elevators were required to present warehouse receipts for cancellation when grain was shipped out.

This system worked without creating any serious difficulties until the winter of 1930, when the Electric Elevator and Grain Company, with a private terminal elevator at Fort William, became insolvent. It was found that the grain in the elevator did not correspond in grade with the outstanding warehouse receipts. Moreover, the bank to which the Electric Elevator and Grain Company was indebted claimed that under the security given to it by the company under Section 88 of the Bank Act it possessed a prior claim upon the grain. This issue was not decided at law. The various creditors came to an arrangement by which the losses were absorbed and any warehouse receipts for grain held by farmers were protected. The issue raised by the bank, however, was a serious one since it touched the soundness of warehouse receipts on grain.

At the time a revision of the Canada Grain Act was in preparation and a great deal of thought was given to devising legislation that would protect the validity of warehouse receipts. Amendments to the Act in 1929 had prohibited mixing in the first four grades of wheat, and the revised act of 1930 provides for public terminal elevators, where no mixing is permitted, and for semi-public elevators, where grades may be mixed except as stated above. Both these classes of terminal elevators may by the new statute issue warehouse receipts. It is also provided that the manager of a terminal elevator shall issue terminal warehouse receipts "to himself in respect of grain which such manager owns or to which he is solely entitled at the time it is received into the elevator, and warehouse receipts so issued or ware-

house receipts issued to others covering grain in such elevator to which such manager has become solely entitled after it has been received therein, may, upon the cancellation or surrender thereof, be replaced by new warehouse receipts, subject to such regulations as the Board may make in that behalf; such new warehouse receipts shall be warehouse receipts for all purposes under this Act."

The safeguards established by the act are that "Notwithstanding anything in the Bank Act, when an elevator or warehouse receipt is outstanding in respect of any grain delivered into an elevator, no charge or interest in the grain covered thereby, which affects the interest of the holder of the receipt, may be created by such holder or by the operator or manager of such elevator otherwise than by the endorsement or delivery of such receipt to the person in whose favour the charge or interest is created." To meet the problem that grades of grain may have disappeared as a result of mixing in the semi-public elevators it is also provided that "The holders of warehouse receipts outstanding in respect of grain in any public or semi-public terminal elevator shall jointly be entitled in priority to all other claims to a quantity of grain in such elevator equal to the total quantity covered by such warehouse receipts."

Thus the Canada Grain Act of 1930 contemplates that where terminal warehouse receipts are issued they become the sole basis of financing loans upon the security of the grain. They give to the holder right and title to the grain without any possibility of an underlying bank lien. By comparing official weights and grades inwards and outwards for grain receipts and shipments with the warehouse receipts issued and cancelled, it is possible for the registrar to establish the approximate of grain in store in terminal elevators at any given time. If the Board of Grain Commissioners are

not satisfied with the returns submitted, they have the power to weigh up and inspect the grain in the elevator. In the event of a default in honouring a warehouse receipt the Board of Grain Commissioners calls upon the bonding company to make good the deficit up to the extent of the bond.

III. LOANS TO EXPORTERS.

Each branch of the grain trade in its relationship with the banks stands upon its own feet. Although the export of grain is chiefly in the hands of a few powerful organizations, which are also strongly entrenched in the country elevator and terminal fields, the business is handled chiefly through subsidiary export companies. These companies require their quota of credit. An export company, having sold a cargo of wheat to be shipped out of Fort William on a given date, will pay 10 or 15 per cent of the cost of this wheat out of its own resources and will look to the bank to supply the remainder of the funds. As the warehouse receipts are delivered to the exporter for the purchases made they are deposited with the bank as security for the loans, which makes full cash payment to the vendor possible. When the cargo has been accumulated, the warehouse receipts giving title to it will all be with the bank. When the date for shipment arrives, in order to get the grain out of the terminal elevators, the warehouse receipts are delivered to the Lake Shippers' Clearance Association, which in return gives a certificate to the bank that it holds documents for that amount of wheat in escrow on the bank's account. The Association orders the grain shipped, and when the cargo is loaded it is billed in the name of the bank.

A draft is made out for the amount of the sale and the shipping bills (including bills of lading, inspection certificate, and insurance policy) are attached. The bank sends this draft

forward to its branch or agent in Montreal or New York as the shipper's instructions may require. This draft is then presented as directed. If the transaction is a sale to a sea-board house, the transaction becomes complete, when the draft is paid on presentation and the shipping bill is surrendered. The bank credits the export company and the loan is extinguished.

In many instances the sale made by the export company calls for delivery of the grain at Liverpool or some continental port. In this event the draft will be directed to the agent of the export company at New York or Montreal. This office will have its own credit arrangements. The payment of the Winnipeg draft will be handled by an extension of credit, based on the security of the bills of lading and ocean shipping documents when the latter are made out. A bill of exchange on the foreign importer will be drawn and the documents will be attached. At the seaboard it is the custom of the banks to buy this bill outright, but generally with bankers' endorsements. The exporter sells his exchange to the bank and is out of the transaction at that point. The grain crosses the ocean in the name of the bank or it is shipped to the order of the exporter and endorsed by him to the bank. When the bank presents the bill to the importer, he takes it up and receives his documents. Canadian grain is always sold "Canadian certificate final" with official weights at the point of exportation, and these terms greatly facilitate the banking arrangements necessary to carry the grain through to the foreign buyer.

A difficulty has recently appeared in connection with the ability of the banks to hold the proper collateral while the grain is moving from the head of the Lakes to the eastern seaports. It has been customary for the bank to hold the lake bill of lading until the grain reaches Montreal

or New York or whatever port it is to be shipped from. But while the bank may hold the shipping bill from the Lake steamer, the grain in fact may have been unloaded at a lower lake transfer elevator, may be held there in storage for some time, and eventually may be shipped forward by rail or water to its destination. It is at this point that the lake bill of lading will be surrendered and a warehouse receipt received.

A difficulty occurs should anything happen to the grain after it has been duly discharged by the Upper Lake vessel into a properly licensed transfer elevator. While the bank continues to hold the lake bill of lading, it would appear that the vessel has discharged its obligation with the delivery of the grain into the elevator. It is not the custom for transfer elevators to issue warehouse receipts. Moreover, if the banks had to exchange documents at the transfer point and again when the grain is delivered from the transfer elevator to the water or rail carrier, this procedure would undoubtedly delay the movement of grain and work a hardship upon the exporter. If grain is held back at Buffalo or any of the Lower Lake ports at the present time, the exporter can wire to have it sent forward to catch a certain vessel at Montreal or New York. If paper had to be sent forward and surrendered before the release of the grain, it would involve a delay of possibly two days. It is to avoid such a delay that a certain amount of good faith has been always relied upon in the handling of the security, and the system worked smoothly up to the beginning of 1931.

In the winter of 1931 an instance was discovered where a considerable quantity of grain was ordered out of a transfer elevator by an exporter's agent and shipped abroad, and the proceeds were converted to the agent's own use. This transaction, while it involved criminality, revealed a weakness in

the present custom of the banks of relying upon a lake bill of lading for security against advances made on the grain. At the present time measures are being taken to protect the banks or any party who has lent money upon the security of the lake bill of lading.

IV. HEDGING AND SPECULATION.

The banks insist that where loans upon the security of grain are made, the companies borrowing shall hedge their holdings in the market for futures. This has the effect of stabilizing the position of the borrowing company. Apart from this proviso the banks have no direct connection with the market for futures, or with speculation in grain. In fact, the banks discourage such speculation, and, indeed, claim they do not knowingly lend money for speculation. Banks no doubt lend funds upon the security of grain or upon other security, and the funds so acquired are used by the borrower to engage in speculation. But the basis of the loan is the security given, not the purpose for which the proceeds thereof are to be employed. Grain speculation is chiefly carried on with the speculator's own money.

If a person desires to speculate in the market for futures, he will be required by the broker handling his account to deposit a margin of 15 to 20 cents per bushel on the trade. With such a margin in hand the broker will execute the transaction and according to the course of the market will credit the operator with gains or demand additional funds to maintain the margin. If the margin is not maintained, the operator is sold out by the broker to protect himself.

To obtain funds to speculate with or to support a speculation already entered upon, a customer of the bank may pledge various assets and thereby obtain a credit or additional credit, but his commitments in the market for futures is not

the basis for this advance. In one respect the market for futures differs from the stock market. In the stock market every sale is a transaction involving an exchange of cash and securities. The securities so handled become a basis for bank credit. In the market for futures in grain purchases and sales are settled upon the basis of differences, and rarely is the delivery of grain made or demanded.

The chief services of the chartered banks, to the grain trade are the financing of purchases from and of advances made to the farmers as they deliver grain to the elevators at country points, the financing of the carrying charges which at times amount to a very heavy sum, the carrying of grain dealers and terminal elevator companies between the time that grain is placed in storage at the terminal elevators and its sale for export, and the financing of the exporter while the grain he has sold moves from the terminal point until it is delivered to the foreign buyer.

V. BONDING AND INSURANCE.

Apart from the chartered banks two other classes of financial institutions have a large interest in the grain trade. These are the bonding and the insurance companies. All elevators companies are required to file a bond with the Board of Grain Commissioners, based on the capacity of the elevator or elevators operated and the nature of the business conducted.¹ In addition, track buyers and grain dealers who buy from the farmers but do not pay cash for their purchases, must execute a bond. The total amount of bonds filed with the Board for the season of 1930-31 amounted to the large total of \$33,198,449, divided among the various classes of licensees as follows:

¹See page 388.

Track Buyers.....	\$ 1,013,000
Commission Merchants.....	2,133,000
Grain Dealers.....	45,000
Public Terminal Elevators.....	620,000
Semi-Public Terminal Elevators....	23,363,249
Private Terminal Elevators.....	383,000
Eastern Elevators	3,269,000
Public County Elevators.....	2,240,200
Private Country Elevators.....	69,000
Mill Elevators.....	63,000
	\$33,198,449

For the season of 1929-30 the total amount of bonds filed with the Board of Grain Commissioners amounted to \$19,146,321. The increase in the amount for 1930-31 was mainly due to the fact that the large private elevators operated at the head of the Lakes and at Vancouver during 1929-30 (under the Grain Act of 1930) changed to semi-public terminal elevators, which were bonded for that year at the rate of 23 cents per bushel of capacity. Previously these elevators were bonded at eight cents per bushel of capacity with the Board of Grain Commissioners, and 15 cents per bushel with the Winnipeg Grain Exchange.

The Grain Act also provides that the manager of every licensed public and semi-public elevator in the western division shall at all times keep all elevator grain fully insured, by companies approved by the Board, against loss or damage by fire for the benefit of those who own the grain stored therein. Two types of insurance policies are employed. The term "specific" is used to distinguish insurance policies issued for fixed amounts, effective during a specified period and covering grain in store in an individual elevator. "Open" grain insurance policies cover the value of grain in store, up to a

specified limit, in each of a group of elevators. Such policies require monthly statements to be furnished by the assured, showing the actual value each day of the grain in store in all of the elevators covered by the policy. The large line companies, in the case of country elevators, prefer the open form of insurance, as affording a certain measure of security to the banks against the loans advanced. Copies of the statements of the actual value of grain in store are made available to the banks for checking against the loans advanced. In view of the nature of the policies employed and the varying amount of grain that may be in the elevators at any one time, it is not possible to state accurately the amount of insurance carried on grain in any given year, but at the peak point of the crop year insurance in force to protect against losses from fire amounts approximately to \$263,800,000.

CHAPTER XV

FEDERAL CONTROL OF THE GRAIN TRADE

THE Canada Grain Act has been called the "Magna Charta of the grain trade", but a more accurate designation would be that it is the Magna Charta of the Canadian grain grower. The Act has been built up into its present form as the result of successive revisions, due chiefly to complaints emanating from the producers or their organizations. Since the Canadian West became a wheat-exporting region, there have been ten important investigations into the grain trade. While these have not revealed anything seriously wrong with the methods of the trade, in certain instances they have exposed possibilities of abuse and causes of grievance. Revisions of the statutes followed with a view to removing the causes of complaint. The Manitoba Grain Act was passed in 1900. It was extensively amended in 1908. In 1912 there was a general consolidation of grain legislation into one Act. In 1925, following the report of the Royal Grain Inquiry of 1923-24, the Act was rewritten. In 1929 important changes were incorporated, and in 1930 a fresh consolidation took place. The present Grain Act, therefore, represents successive attempts on the part of the Federal Government to meet the complaints of the western grain growers. In addition, it endeavours to standardize the methods employed by the trade in handling grain, and to adjust the law to fit conditions created by changes in

production and transportation and by the rise of the pool method of marketing.

Federal control of the grain trade has its roots historically in general regulations establishing legal weight measures and grades for agricultural commodities. Some of these regulations go back even to the French regime in Canada. Another stage was reached when the government not only laid down standards, but also provided its own officers to determine these standards, as a part of the regulation of commerce. In the case of the grain trade, the northern states of the American Union had worked out a system of inspection, which Canada copied as early as 1863.¹ In Canada the appointment of the inspectors was vested in the several boards of trade in existence at that time.

When the Dominion of Canada was formed by the British North America Act in 1867, the regulation of trade and commerce was made a federal power under section 91 of the Act. By the same section the Federal Parliament was also given authority to legislate in connection with weights and measures. For a number of years any control over the grain trade was exerted through the provisions of the weights and measures acts and the sale and inspection acts. But as the trade grew and the bulk-handling system developed, grievances occurred, and it became necessary to deal with the grain trade more specifically. The Manitoba Grain Act of 1900 was the first attempt made, but not until 1912 was an inclusive statute passed and the main outlines of the present methods of government control established. Since 1912 changes have made the control more comprehensive, and attempts have been made to strengthen the constitutionality of the measure.

¹ Holton, *Parliamentary Debates*, 1st session, 1863.

I. THE CONSTITUTIONAL PROBLEM.

There has always been some doubt as to whether the powers claimed by the Federal Government in the Canada Grain Act do not go beyond those conferred upon it by the British North American Act. Under the British North American Act while the Federal Government may regulate trade and commerce, legislation affecting property and civil rights belongs to the provinces. The line of demarcation between these two spheres is not always clear, and in appeals to the court the rights claimed by the Federal Government in certain sections of the Canada Grain Act have not been sustained.

In 1917-18 complaints were made by the producers that the terminal elevators at the head of the Great Lakes were creating undue overages at their expense. The agitation led to an investigation, which was followed by an amendment to the Grain Act in 1919.² This amendment provided that if at the end of any crop year in any terminal elevator the total surplus of grain was found to be in excess of one quarter of one per cent of the gross amount received into the elevator during the crop year, such surplus was to be forfeited to the Canadian Government. This provision was challenged in the Exchequer Court, where it was held that the amendment was in essence legislation dealing with property and civil rights and not a regulation of trade and commerce.³ On appeal to the Supreme Court of Canada the judgment of the Exchequer Court was sustained.⁴ The Federal Government thereupon carried a further appeal to the Privy Council. In that tribunal there was, however, no judgment given, because in the meantime the Canada

²Sec. 95, s.s. 7.

³1924 Ex.C.R. 176.

⁴S.C.R., 1925, p. 434.

Grain Act of 1925 had been passed. The revised statute endeavoured to satisfy the requirements of constitutionality on another basis.

In his judgment in the Supreme Court of Canada sustaining the Exchequer Court, Mr. Justice Duff had observed that one way by which the Dominion might acquire authority to regulate elevators was by a declaration properly framed under section 92 of the British North America Act to the effect that elevators were works for the general advantage of Canada. The Dominion Government in drafting the Grain Act of 1925 followed this course by making such a declaration and making it applicable to all grain elevators.⁵ In the revision of 1930 this clause was not repealed.

Meanwhile other sections of the Act had been tested in the courts and held to be *ultra vires*. The Act obliged the Board of Grain Commissioners to license track buyers and primary grain dealers. Track buyers were defined to be any persons, firm or company, who bought grain in car lots on track. Primary grain dealers meant those who carried on the business of purchasing, handling, storing, or selling grain in any manner not otherwise defined or provided for by the Act. The conditions of taking out a license required the execution of a bond with the Board of Grain Commissioners for such amount and in such form as was satisfactory to the Board. Other sections of the Act governed the conditions under which these classes of licensees were permitted to carry on business. The object of these provisions of the Grain Act was to bring under control the operations of a small class of grain buyers who operated only at local points but did not have country elevators. As a rule, these men are financially weak, but by making extravagant promises they are able to persuade farmers to sell them grain on a time basis or to entrust them with grain to sell.

⁵Canada Grain Act, 1925, sec. 233.

In these circumstances defaults in payment among them, were not infrequent, and when defaults occurred the farmers found themselves without protection and, as a rule, lost heavily. The Grain Act, by making such buyers execute a bond and comply with specified methods of buying and settlement, aimed at protecting the grower as far as possible. The obligation to secure a bond involved some scrutiny of the character of the applicant, and in the event of a default the proceeds of the bond were available to apply on claims. But on a number of occasions, when complaints were forwarded to the Board of Grain Commissioners that men were operating as track buyers or primary grain dealers without being bonded or licensed, the Board found itself unable to do anything. When it attempted a prosecution for a breach of the Act, the courts held that the sections requiring men engaged in this occupation to take out a license were *ultra vires*,⁶ as an interference with property and civil rights within the provinces.

To meet these defects the Grain Act of 1930 does not rest the legislative competence of parliament to enact such sections purely upon the power to regulate trade and commerce, but also upon those conferred upon it in connection with transportation and patent and copyright. By section 92 of the British North America Act the Dominion is given control over interprovincial transportation. By section 91 it is given exclusive jurisdiction over patents and copyright. What the 1930 Grain Act does, in effect, is to patent or copyright the grade names employed in designating grain and to permit only licensees to use the grade names, and also to provide that the railways shall not accept from or deliver grain to unlicensed elevator operators.⁶

"No railway company or vessel shall receive any western grain from any elevator or discharge any such grain into

⁶Canada Grain Act, 1930, sec. 54, 55, 140, 144, 149, 169.

any elevator after the expiration of forty-eight hours from the time at which notice has been given to it by the Board that the manager of such elevator has not obtained a license under this Act or that his license thereunder has been revoked." By this section elevator operations can be completely blocked if the operators fail to take out a license under the Board of Grain Commissioners.

The issuance of a license to a commission merchant, a track buyer, or primary grain dealers is necessary if the buyer desires to trade in grain under the grades named and defined in the Grain Act. The only exceptions are cash purchases and sales, and purchases for future delivery on the market in futures of a recognized exchange. It is also provided that nothing in the Act shall be deemed to prevent any person from dealing with any grain not described either by a grade name or by a sample selected under regulations made under the Act. Thus any grain dealer who wishes to make use of the legal grades as established and copyrighted by the Federal Government must take out a license with the Board of Grain Commissioners and come under its jurisdiction.

Finally, the Act provides that "except grain shipped under a regulation or order made by the Board pursuant to this Act, no western grain shall be shipped or accepted for shipment out of Canada by any railway company or by any vessel unless such grain has been inspected and graded under this Act, and in any bill of lading or other contract for the shipment of grain out of Canada the grain shall be described by the grade name of the grade to which it has been assigned."

These provisions of the Canada Grain Act are designed to give the Federal Government complete power to control handling and trading in grain. The Act does not, however,

go so far as to interfere with actual price-making. While it establishes the form of document that shall be used when an elevator company buys grain from a farmer, the price settled upon is a matter of mutual agreement. Underlying the statute are the fundamental ideas that the grain grower shall be protected: (1) against fraud or negligence on the part of elevator operators; (2) from exploitation arising from excessive charges for services rendered; and (3) from indirect losses due to the quality of the grain being deteriorated before it reaches the world's markets. In a very true sense the Act is the Magna Charta of the grain grower, but in connection with its operation the grain trade has greatly benefited by the enforcement of the high standards of performance it has imposed.

II. POWERS OF THE BOARD OF GRAIN COMMISSIONERS.

Responsibility for the administration of the Canada Grain Act devolves upon the Board of Grain Commissioners for Canada, which is given wide powers under the Act. The Board has jurisdiction to inquire into any matter relating to

- (a) The grading of any grain;
- (b) The weighing of any grain;
- (c) The deductions made from any grain for dockage;
- (d) Any shortage appearing upon the delivery of any grain into or out of any elevator;
- (e) The unfair or discriminatory operation of any elevator;
- (f) The deterioration of any grain during storage or treatment;
- (g) The refusal or neglect of any person to comply with any provision of the Act or of any regulation made or license issued pursuant thereto; or
- (h) Any other matter arising out of the performance of the duties of the Board.

After any inquiry has been made by it the Board has authority to order compensation to be paid for any loss sustained by reason of any failure of any person to fulfil any obligation imposed by the Act or by any regulation made or license issued pursuant thereto. In case of any shortage of grain upon its delivery into or out of any elevator the Board may apportion the amount of any loss as between the manager of the elevator and any railway company or vessel taking part in the transportation of such grain.

Any order of the Board for the delivery up of any property or the payment of any money shall, on the deposit of a certified copy in the office of the registrar or clerk of the superior court of any province, have the same effect as a judgment of such court, and the execution of the order may be had according to the usual practice. The Board of Grain Commissioners, by these provisions, is thus equipped to handle loss and damage action occurring under the Act. Safeguards attached to this grant of power are provisions for hearing before the issue of an order and for appeal to the regular tribunals in case either party to the complaint is dissatisfied with the award.

In the main, the Act confines itself to laying down the broad general principles which are to govern the handling and merchandising of grain. The regulation of the details of operation is left to the Board. The regulatory powers of the Board include fixing the fees payable for any services performed by any officer or employee of the Board, fixing the amount of security by way of bond or otherwise to be given by any applicant for any license under the Act, approving the forms to be used by licensees in transactions entered into by them, specifying the character of the records to be kept by licensees, and the form of the reports and returns to be made by each class of licensees to the Board,

fixing the maximum charges authorized to be made for the discharge of grain into and out of elevators, and for insurance against fire, storage, cleaning, treatment and handling of grain while in any elevator, specifying the mode and times and conditions of the registration and cancellation of warehouse receipts, specifying the standards of construction for elevators, defining the responsibility of elevator managers and vessel owners for shortages and overages on the delivery of grain from elevators into vessels or from vessels into elevators, and in general any matters relating to the handling of grain.

Elasticity is secured by the nature of the regulations or orders made by the Board. These may be general or restricted. Directions are deemed to be orders if they are limited in their application to a period not exceeding a crop year or to particular persons named therein. All other directions affecting the public are deemed to be regulations, notwithstanding that they may be limited in their application to particular classes of persons or to specified divisions, districts, or places.

Until the revision of 1930 a regulation of the Board of Grain Commissioners had to be submitted to the Privy Council at Ottawa with a recommendation for enactment. If the recommendation was acceptable to the Council, the order-in-council was then passed and became effective under the date set forth. By the Act of 1930 every regulation of the Board becomes effective without requiring the formal approval of the Privy Council. On a regulation being passed by the Board a copy is transmitted to the Minister of Trade and Commerce, and it is required to be published in the *Canada Gazette*. Any such regulation, however, may at any time be disallowed by the Governor-in-council. This change in procedure is designed to enable the Board to deal

with greater promptness with conditions as they arise. Under the old Act considerable delay might occur between a recommendation being sent forward by the Board and the passing of an order-in-council to give it effect. In the rush of the grain handling season a delay of even a few days might hamper operations and seriously inconvenience those concerned. The right of disallowance is a safeguard against irresponsible action. As a part of the Government service the Board of Grain Commissioners comes under the Department of Trade and Commerce.

The Board of Grain Commissioners consists of a chief commissioner and two other commissioners, who are appointed by the Dominion Government to hold office for ten years. The executive offices of the Board are located at Winnipeg. In addition, the Government appoints four assistant commissioners, who hold office during pleasure and who act in an assisting capacity. One assistant commissioner has his headquarters in Alberta, one in Saskatchewan, one in Manitoba, and the fourth at the terminals at the head of navigation on Lake Superior. The commissioners and assistant commissioners are required to devote their whole time to the performance of their duties and must not directly or indirectly be interested in any commercial dealings in relation to grain.

III. THE DOMINION GOVERNMENT ELEVATOR SYSTEM.

Government ownership of a number of terminal and eastern elevators creates a problem of its own with respect to regulation and control. At present there are in Canada 25 elevators owned by the Federal Government. Three departments of the Government are interested in grain elevators. The Department of Trade and Commerce has built nine terminal elevators, of which six are operated by

a manager appointed by the Governor-in-Council and placed under the Board of Grain Commissioners, two are under lease, and the other was transferred in 1923 to the Board of Harbour Commissioners of the port of Vancouver. The Department of Marine has under its jurisdiction the Harbour Boards of the ports of Vancouver, Montreal, Quebec and Halifax. At each of these points there are elevators, which are the property of the Crown and are operated by the respective Boards of Harbour Commissioners. The other Government-owned elevators have been leased to private parties or are operated by the Canadian National Railways, which is under the Department of Railways and Canals. Elevators recently constructed at Prescott on the St. Lawrence, and at Fort Churchill on Hudson Bay, were built under the Department of Railways and Canals. The new interior terminal elevator at Lethbridge, Alberta, was built under the supervision of the Department of Trade and Commerce.

When the first elevator constructed by this department was erected at Port Arthur in 1913 it was placed directly under the newly organized Board of Grain Commissioners. They operated it as a public terminal on a commercial basis with a view to obtaining a greater comprehension of the problems of terminal elevator control. About this time there was a strong agitation for the government ownership and operation of all terminal elevators, and the Canada Grain Act of 1912 (sec. 13) empowered the government "to construct, acquire, lease or expropriate" terminal elevators. Interior terminal elevators were supposed to be the first step in a programme of government ownership. When these were built at a number of points, they were placed under the control of the Board.

The Royal Grain Inquiry Commission of 1923-24 pointed out the anomalous situation created by the fact that the

Board was a regulative body and at the same time was operating elevators. "It seems anomalous to us that the body which is vested with the great responsibility of licensing, regulating and disciplining elevator operators, fixing their charges, hearing complaints made against them, should itself be engaged in the elevator business and, therefore, subject to the same criticism and the same complaints as are levelled from time to time against their competitors in the trade.⁷ As a result of this criticism the Act of 1925 provided that these elevators should be operated by a person or a body appointed by the Governor-in-Council for the purpose, but that the operation of all such elevators should be subject in all respects to the jurisdiction of the Board and should be conducted in accordance with the regulations made under the provisions of the Grain Act concerning the operation of elevators.⁸ This is the position at present with respect to the six elevators which remain under the Department of Trade and Commerce. They are under the Board of Grain Commissioners and operated by a manager who is subject in every respect to all the provisions of the Canada Grain Act.

With respect to elevators operated by the Canadian National Railways the situation is quite clear. These come under the jurisdiction of the Board in precisely the same manner as elevators owned by private interests. No problem involving jurisdiction has ever arisen.

Some difficulty has developed in the past, however, in connection with elevators operated by Boards of Harbour Commissioners, particularly with the Board of Harbour Commissioners for Montreal. In 1914 an order-in-council was passed upon the recommendation of the Minister of Trade

⁷ *Report of the Royal Grain Inquiry Commission*, p. 152.

⁸ Canada Grain Act, 1925, sec. 112, sub. sec. 5.

and Commerce, conferring jurisdiction upon the Board of Grain Commissioners over the elevators of the harbour commissioners of Montreal and Quebec as well as over those of the government railway at Saint John and Halifax. Although this order was duly passed, the Board was never able to make effective the jurisdiction which it conferred.⁹ The Royal Grain Inquiry Commission was asked to recommend that this order be made effective, and the Montreal Corn Exchange addressed a letter to the Minister of Marine and Fisheries requesting that this order-in-council be put in force. When parliament deliberated upon this subject, it enacted in the legislation of 1925 that: "(1) Notwithstanding anything contained in this act or in any other act, the Board shall have supervision of the weighing of all grain received into and delivered from all elevators situated at Montreal, Quebec, Saint John and Halifax, Vancouver and Prince Rupert and owned or operated by His Majesty, by the Canadian National Railways or by any other railway, by a Board of Harbour Commissioners, or by any person or corporation. (2) Notwithstanding the provisions of any other general or special act, the provisions of this act shall apply to all terminal elevators owned or operated by His Majesty, by a Board of Harbour Commissioners or by any person or corporation."

Up to the close of the license year of 1929-30, however, the Board of Harbour Commissioners for the Port of Montreal refused to take out a license. In 1929 a Royal Commission of inquiry appointed by the Province of Saskatchewan to inquire into the conduct of the grain trade, reported after investigation that the management of the elevators at the Port of Montreal were permitting practices to occur that contravened the Canada Grain Act. The Canada Grain Act

⁹*Royal Grain Inquiry Commission*, p. 153.

of 1930 continued to make it an obligation of Boards of Harbour Commissioners to take out a license under the Board of Grain Commissioners, but it relieved them of the obligation of filing a bond. (Sec. 79~~4~~3). All the Boards of Harbour Commissioners in Canada operating grain terminals took out licenses for the license year of 1930-31. With this action the jurisdiction of the Board of Grain Commissioners extends *de facto* as well as *de jure* over all grain elevators in Canada.

IV. ADMINISTRATIVE FUNCTIONS OF THE BOARD.

The quasi-judicial and regulative functions of the Board of Grain Commissioners are those which most commonly attract public attention, but upon the competence with which the Board supervises certain specific services, directly assigned to it, depends to a large degree the smooth and efficient operation of the grain trade. The services under the Board include inspection and terminal weighing, the operation of six government-owned terminal elevators, the work of the Dominion Grain Research Laboratory, the collection and tabulation of statistics covering grain handling, the licensing and bonding of all elevators, and the registration and cancellation of warehouse receipts upon the delivery and discharge of grain from terminal elevators. Each branch is under the control of an executive officer who reports directly to the Board. Officers of the Board include the Chief Grain Inspector for Canada, the Chief Weighmaster for Canada, the General Manager of the six Canadian Government Terminal Elevators, the head of the licensing and bonding department, the statistician, a chief chemist, and a registrar for warehouse receipts. Each man is held responsible by the Board for the proper operation of the branch of the service over which he is placed.

In addition to these officers there is the secretary of the Board. Apart from the usual secretarial duties involved in the meetings of the Board, the handling and disposal of complaints, and the issuance of orders and regulations, through the secretary's office the Board handles directly such duties as the appointment and convening at the proper time of the Western and Eastern Grain Standards Committees, the arrangements for the annual sessions at Vancouver, Winnipeg and Toronto, to discuss maximum tariff charges by the elevator companies, and the general routine of reports necessary in maintaining touch with the assistant commissioners in the provinces and other officers of the Board. The Secretary's office is the medium through which communications are made to the Department of Trade and Commerce in all matters pertaining to finance and to staff. Where questions of staff are involved the Department in turn deals with the Civil Service Commission.

A necessary part of the internal economy of the Board is the accounting department, which is responsible for the proper handling of the income that accrues to the Board from the various services for which it exacts fees. All income is transmitted to the Treasury Department at Ottawa, where the account of the Board is carried. The accounting department is also responsible for the correctness and legality of all accounts passed for disbursement. This includes the pay-rolls at all western points where the Board maintains a service.

The licensing and bonding department is responsible to the Board for the issuance of licenses and for the execution of a proper bond in accordance with the schedules fixed for each class of licensee. The Board specifies the information required to be furnished to it for each class of license issuable under the Act, states the terms upon which the license is

issued, and approves of its form. In the case of eastern elevators, when applications are made to vary the terms of the individual license, each application is passed upon by the Board as a special case.

The license year runs from September first to August thirty-first. For the year 1930-31, 5,795 licenses were issued. Of this number 5,688 were issued to 185 companies for the operation of elevators, 48 were to track buyers, 56 to commission merchants and 3 to primary grain dealers. The license fees amounted to \$31,352.

The Board has approved a list of 38 companies from whom the applicants for a license may secure a bond. The approval of these surety companies is based upon the reports of the Insurance Department under the Federal Minister of Finance. For each class of license the Board authorizes a schedule of amounts for which the applicant must present a bond. The schedules are graduated up to a maximum. That for a country elevator company is based both upon the number of elevators and the capacity of the individual houses. A country elevator with a storage capacity of 35,000 bushels or under requires a \$5,000 bond. The amount increases to \$12,000 for country elevators up to a storage capacity of 125,000 bushels. The maximum amount to cover one country elevator is \$20,000. When the bond is to cover more than one elevator the next ten after the initial 125,000 bushels of storage capacity are bonded at \$1,000 for each additional house and the next 56 at \$500 for each additional house. The maximum amount of bond required to be executed by a country elevator company is \$50,000. Private country elevators are bonded for \$1,000 per elevator. Mill elevators are bonded at from \$1,000 to \$3,000 according to the capacity. Public terminal elevators are bonded at eight cents per bushel storage capacity; semi-public terminal ele-

vators at 15 cents per bushel storage capacity; private terminals at \$3,000. Where, however, private terminals buy grain but do not make payment at the time of purchase, an additional bond of 25% of the value of the purchase must be filed with the Board with a minimum bond of \$8,000.

Commission merchants and track buyers are bonded upon the basis of the approximate value of the grain handled during the previous season. The minimum bond is \$2,500 and the maximum \$150,000. The maximum sum is reached upon a handling of \$4,000,000 of grain or over. Where the business of a commission merchant shows such increase during the season as to go beyond the amount upon which the bond is based, the bonding department may call for an additional bond. This possibility is kept under observation by requiring the commission merchants to file weekly certified statements of handlings.

On account of the financial weakness of primary grain dealers the bond required for this class of licenses is on a higher scale than for a country elevator. The minimum is placed at \$2,500 and the maximum bond is for \$225,000.

The licensing and bonding department upon receipt of applications for licenses must prepare bonds for the required amount and only issue the license upon the receipt of the bond duly executed. It keeps a register of all bonds and endorsements filed.

In addition to these duties the licensing and bonding department keeps a record of the authorized agents of all licensed grain dealers, collects and preserves a record of all elevators built, sold, leased, or destroyed; prepares and keeps a record of all railway stations where elevators are located, showing the firms operating at each point; prepares and preserves a record of all grain-loading platforms in western Canada; keeps a register of all bonds covering employees of

the Board. In connection with these duties it prepares a handbook, published annually by the Department of Trade and Commerce, which makes available the names of all licensees under the Canada Grain Act, and the owner or licensee of each elevator with its capacity and location.

The practice of registration and cancellation of warehouse receipts, apart from its direct purpose of validating receipts by enabling a check to be kept on stocks in the terminal elevators, is also the basis of control in enforcing the non-mixing provisions of the Act. The registrar's records, in conjunction with the annual stock-taking, makes it possible to determine whether the law prohibiting mixing in the upper grades of Northern wheats has been observed. It is by these records that the Board of Grain Commissioners are able to determine whether the statutory overages allowed of one-quarter of one per cent of handlings have been exceeded in any given crop year.¹⁰

The statistical department collects and records statistics of car handlings, inspections, stores of grain in various positions, shipments and prices. For some classes of information the figures are received for each day; in other instances reports are on a weekly or a monthly basis. The information is circulated to the public in a weekly bulletin published by the agricultural branch of the Dominion Bureau of Statistics. In addition, under the Inland Water Freight Rates Act, as amended in 1925, a copy of all charters made for grain shipments on the Great Lakes is filed with this office.¹¹ The statistical department of the Board of Grain Commissioners collaborates with the Dominion Bureau of Statistics in preparing the Annual Report on the Grain Trade of Canada.

The value of ample and accurate statistics upon any line

¹⁰See pp. 126, 147.

¹¹See p. 217.

of trade is not always fully appreciated, but the absence of accurate figures covering the grain trade would very soon be felt. The statistical department of the Board of Grain Commissioners may be said to have three functions. It supplies the general records in physical units of the trade of Canada in western grain and is thus an important subsidiary to the Dominion Bureau of Statistics. It provides the grain trade with a ready means of information for various quantitative aspects of the volume of trade, which would have to be obtained in some other way if not secured through this government service. Finally, it is necessary to the Board of Grain Commissioners, which must be supplied with information, to enable it to perform its duties in supervising the handling of grain, and in setting tariffs of charges under the principles laid down in the Canada Grain Act.

The Grain Research Laboratory was established in 1913 and was conducted as a separate institution directly under the supervision of the Department of Trade and Commerce. In 1925, however, it was placed under the control of the Board of Grain Commissioners. The laboratory was established to conduct grain-research work and to advise the chief inspector and the Western Grain Standards Committee upon the grades and milling value of grain. It is in charge of the chief chemist of the board, who is *ex officio* a member of the Western Grain Standards Committee. The laboratory is very complete and contains an experimental milling plant, bakery, protein testing apparatus capable of handling 96 protein tests at one time, and moisture testing machinery.

The laboratory conducts an examination on the value of the new wheat crop each year as soon as it is possible to secure representative samples. It prepares samples of bread made from each proposed standard sample of wheat selected by the Western Standards Committee. This provides a valu-

able safeguard against any grade being seriously out of line in baking strength from other grades, or out of line with the samples of preceding years. Since 1927 the laboratory has arranged for the collection of a large number of samples of wheat, drawn from shipping points all over the three prairie provinces. These samples are tested for their protein content, and upon the basis of the protein tests the laboratory prepares a map which shows at a glance the regions where grain of high and low protein content is grown. The chief chemist also acts as supervisor over the moisture testers used by the inspection department in grading grain. He must see to it that these are accurate and in proper working order.

Apart from specific duties of a routine nature the laboratory may, upon the approval of the Board, conduct general researches into various problems as they arise, such as the milling value of new varieties of wheat, the accuracy of electrical moisture testers, the drying of tough and damp grain, and other problems of a general nature. The information procured is primarily for the guidance of the Board, but it is of some general interest as well.

In connection with a number of major scientific problems, such as the drying of wheat, the value of protein grading, the use of daylight lamps by grain inspectors, etc., the Board has been able to have the valuable assistance of the National Research Council of Canada.

V. PERSONNEL AND COST OF MAINTENANCE.

The wide scope of the work directly under the jurisdiction of the Board¹² requires the maintenance of a personnel of about 800 people. The number varies somewhat from year to year with the size of the crop. The largest department, that charged with the inspection of grain, has a staff

¹²The inspection and weighing services are described in ch. viii.

of 475 men. Weighing comes next with 250 employees. Twenty are employed on statistics and there are twelve in the Grain Research Laboratory. The rest are distributed among the other departments.

The employees of the inspection and weighing departments are located at the inspection and terminal points, the most important centres being Winnipeg, Port Arthur, and Fort William. The inspection department maintains 180 men at Winnipeg, 170 at the head of the Great Lakes, 40 at Vancouver, 26 at Moose Jaw, 20 each at Calgary and Edmonton, 14 at Montreal, and six at Saskatoon. The rest are assigned to terminal elevators at other points. An official of the inspection department is assigned to the ports of Duluth* and Superior on Lake Superior in the United States. His presence there is rendered necessary because a certain amount of Canadian grain is shipped on branch lines coming up from the American border to this terminal. The distribution of government weighmen is determined by the location of the terminals. Winnipeg has 52, Port Arthur and Fort William, 73, and Vancouver, 35.

The annual expenditure of the Board amounts to about \$2,000,000. The expenditures for the inspection service exceeds slightly \$1,000,000, grain weighing \$550,000, salaries and expenses connected with the executive offices \$140,000, the grain research laboratory, \$55,000, the statistical department, \$36,000; the registration and cancellation of warehouse receipts, \$25,000; grain appeal boards, \$17,000; licensing and bonding, \$10,000; and the Grain Standards Committee, \$10,000. Unlike the ordinary government expenditure these outlays are ultimately not a charge against the general revenues of the country but are covered by a tariff of fees charged by the Board in connection with its services. While all moneys received by the Board are paid in to the Consoli-

dated Revenue Fund of Canada, a record of these payments is kept in a special account and the outlays of the Board are charged against it.

The chief revenues of the Board are drawn from the inspection and weighing services. The amounts vary greatly from year to year according to the size of the crop. The scale of fees is such that with a large crop the balance sheet will show a surplus, with a small crop the reverse. On account of the nature of the personnel, many of whom are highly skilled officials, it is not possible to reduce the staff in proportion to the size of the crop. In the fiscal year of 1928-29, with a large crop, the expenditures of the Board amounted to \$1,925,582; but with the small crop of 1929-30 the amount was reduced to \$1,880,786. But the revenue for the year 1928-29 amounted to \$2,254,203, giving a surplus of \$328,620, while the revenue in the succeeding year shrunk to \$1,140,509, causing a deficit of \$740,276. The scale of fees is set at a figure calculated to cover, over a term of years, the expenditures of the Board. Viewed at a cost placed upon the handling of grain, the expense of maintaining the Board of Grain Commissioners and its services varies approximately between two-fifths and three-fifths of a cent per bushel. Based on the value of the grain, the cost is less than one per cent.

PART III

CHAPTER XVI

THE CANADIAN MILLING INDUSTRY AND THE GRAIN TRADE

THE purpose of the present chapter is to exhibit the relationship that exists between the Canadian flour and grist milling industry and the grain trade. It is not intended to make an exhaustive study of this industry, but merely to bring to the attention of the reader the fact that a part of the grain crop finds its market with the mills in Canada. This market for wheat and coarse grains in Canada is composed of grindings partly for domestic use and partly for export to foreign countries. In so far as wheat is concerned, none of the provinces of Canada, except the three prairie provinces, produces sufficient quantities of the varieties desired to supply the demand of its own population. Ontario grows slightly over 20,000,000 bushels of winter wheat annually, part of which is exported and is replaced for home consumption by supplies of spring wheat drawn from the western provinces.

For the crop year of 1928-29 there were milled in Canada 20,872,094 barrels of flour. Exports accounted for 11,808,755 barrels, the balance being available for home consumption. During the same period the output of oatmeal amounted to 14,059,944 pounds and of rolled oats to 138,490,857 pounds. Of these oat products 59,841,200 pounds were exported. Ground oats for feed amounted to 87,599,452 pounds. Pot and pearl barley and barley meal totalled 4,024,362 pounds. Finally, 606,388,971 pounds of feed were

ground from mixed grains. Much of this was custom ground. The principal market arising out of the requirements of the Canadian mills is that for wheat, which amounted to approximately 95,000,000 bushels. The demand for oats is placed at about 16,000,000 bushels. In addition to the small quantity of barley milled for food there is also a demand for barley for malting purposes, which amounts to about 6,000,000 bushels.

I. DEVELOPMENT OF THE MILLING INDUSTRY.

Between the development of cereal crops in Canada and that of the flour and grist-milling industry there is a direct parallelism, the development of the latter keeping pace with the former. The year 1605, which witnessed the growth of the first wheat raised in Canada in Nova Scotia, also marked the erection of a mill in the district to grind wheat. This mill, it is claimed, was the first on the American continent.¹ With the development of Canada other mills were constructed, chiefly to serve the inhabitants, but very quickly flour began to be exported as well as wheat. The French shipped flour to the West Indies and to Cape Breton and Prince Edward Island for the supply of their posts located there. An ordinance of the French administration at Quebec of 1710 concerned the export of flour. It provided that no flour should be loaded for shipment to the West Indies which did not show by suitable identification marks the name of the one who had furnished it. This was to protect the reputation of Canadian flour in the West Indies and to further the "establishment of a commerce which would be very advantageous for this colony in the said isles."²

After the conquest of Canada by Great Britain the export of flour was increased and by 1787 there were reported in Can-

¹*Flour and Grist Milling Industry in Canada, 1921. Dominion Bureau of Statistics, Ottawa, 1922, p. 5.*

²Canadian Archives, Collection Moreau-St. Mery, ix., Pt. 1, p. 269.

ada, three flour mills capable of delivering 1,000 barrels per diem. Between 1793 and 1808 Canada exported 294,000 barrels of flour. In 1808 the exports amounted to 42,000 barrels, a volume of export of this commodity that was not again reached until 1820. The trade, however, continued to grow, but it suffered during the period of the rebellion of 1837.

In 1843 the British government established a preference in favour of Canadian wheat and flour which affected the export of flour from the United States and tended to give the market to the Canadian mills. The flour-milling industry boomed and the trade showed great prosperity. This lasted until the repeal of the Corn Laws in 1846. In that year Canadian exports of flour by sea were placed at 555,602 barrels. The depression in the flour-milling industry and the export trade that followed the repeal was an important part of the general depression that fell upon Canada at that time. While the reciprocity treaty with the United States was in force, there was an international trade in flour. Flour was imported into Western Ontario from the United States, and in lower Canada exports were made into the American states on the Atlantic seaboard. With the abrogation of the reciprocity treaty Canadian millers found it necessary to seek export markets elsewhere. This tended to crowd American flour out of the maritime provinces, but for a period the Canadian milling industry failed to make headway and in fact, declined. Flour exports for the year 1867 amounted to 770,555 barrels. By 1890 flour exports had fallen to the low figure of 296,784 barrels. It may be said with truth that the Canadian flour-milling industry seemed destined to become purely a domestic industry, when the opening of the west, making available abundant supplies of high quality wheat, gave it a new and powerful stimulus.

II. CHANGE IN MILLING METHODS.

Until 1870 the choice flours of the United States and Canada were manufactured from winter wheat. The technical process in vogue was known as the "low" or "flat" grinding method. "The general plan was to bring the millstones very close together, run them very fast, and keep them furrowed with sharp edges so that as much flour could be made at the first grinding as possible."³ This was unsatisfactory in several respects. It did not successfully separate the various constituents of the wheat berry, but ground them up into one mass. As a result, the flour was often discoloured by the presence in the mixture of finely ground bran, and it sometimes became rancid from the oil contained in the germ. Further, the gluten cells in the wheat berry, on account of their hardness, were frequently imperfectly disintegrated and tended to be sifted out of the flour with the bran. When this occurred, the flour was deprived of much of its strength. These difficulties, not wholly overcome in the grinding of winter wheat, became more severe when the miller attempted to deal with hard spring wheat.

The hard spring-wheat berry characteristically possessed a thin, brittle husk, and the gluten cells excelled those in winter wheat in hardness. In these circumstances the millers found it necessary to employ great pressure in grinding and to operate the mill-stones at high speed. This generated heat, which tended to discolour the flour further and also to injure its keeping qualities. Hence the flour produced by winter wheat was whiter, stronger, and had better keeping qualities. This gave it a preferred position on the market, which naturally was carried back to the winter wheat which produced it. As a result, winter wheat commanded a premium over spring wheat.

³Kuhlmann: *The Development of the Flour Milling Industry in the United States*. Houghton, Mifflin, Boston, 1929, p. 113.

However, the settlement of the American northwestern states increased the acreage devoted to spring wheat, and various millers made determined efforts to develop a milling process for spring wheat that would enable its product to compete advantageously with that from winter wheat. In the course of time their efforts were crowned with success. The first step was the use of a system of slow grinding, which did not generate heat, but simply cracked the wheat berry rather than ground it. The middling was then purified from bran and when re-ground it gave a choice flour. The key to this method was the invention of a machine to purify the middlings. The first successful machine gave the name of "patent" flour to the product, and this term has continued ever since, to designate flour of a particular quality. This patent flour was quickly recognized for its excellence, and established for hard spring wheat the reputation of being capable of producing a strong, white flour.

The next step in advance was to copy the methods of the Hungarian millers, who, it was discovered, had to deal with a hard dry wheat not unlike the hard spring wheat of the northwest. This led to the substitution of rollers for stones in grinding. The first rolls in American mills were installed about 1873, but they were unsatisfactory. In 1876 porcelain rolls, devised in Switzerland, were imported. These were found workable, but on account of breaking easily they were expensive. In 1879 a Wisconsin miller patented a corrugated iron roll, which proved highly efficient and economical. It was estimated that these rollers did 50 per cent more work and required 47 per cent less power to operate than did mill stones.

The adoption of the centrifugal reel, also borrowed from Europe, substituting beaters for gravity, to force flour through the cloth was another improvement in technique.

Finally, the practice of tempering wheat by steam and moisture until the berry reached the best consistency for grinding completed the changes necessary for grinding hard spring wheat. These improvements in method had all been achieved and successfully applied at Minneapolis between 1870 and 1890. In Canada the Ogilvie Milling Company was keeping abreast with the latest technical changes. These changes made possible the supremacy of hard spring wheat as a milling wheat for purposes of flour and bread-making. Thus on the eve of the expansion of wheat growing in Manitoba and the Canadian North-West everything was ready to promote a renewal of enterprise in the Canadian milling industry.

III. RISE OF THE LARGE MILLING COMPANIES.

The name of Ogilvie has been connected with the flour-milling industry in Canada since 1801 when an Ogilvie acquired a small flour mill on the island of Montreal. In 1852 A. W. Ogilvie formed a partnership with James Goudie and the enterprise grew in size. As the west opened Ogilvie's were the first to recognize the great possibilities of hard-wheat flours. In 1881 Ogilvie's established a large mill at Winnipeg, partly equipped with stones and partly equipped with rollers. They also initiated the practice of milling companies establishing their own line of country elevators to ensure a supply of wheat direct from the farmer. In 1887 the Lake of the Woods Milling Company was formed to manufacture flour on a large scale from western wheat. This company erected its first mill at Keewatin, 129 miles east of Winnipeg where it would lie between the western grain fields and the Canadian terminals on Lake Superior. The Western Canada Flour Mills, Limited, and the Maple Leaf Milling Company, also entered the field.

With these companies Canada was in a position to increase her flour exports.

These large milling companies have not located all their plants directly in western Canada though they draw their supply of wheat from the prairies. Eastern plants are located at strategic points along the various routes that wheat follows on its way to the Atlantic seaboard. Montreal is an important milling centre. The largest single plant of the Ogilvie Flour Mills Company is located there. This plant has a capacity of 11,000 barrels daily. There are other important milling enterprises at Montreal, such as the Dominion Flour Mills, whose plant has a daily capacity of 7,000 barrels, and the St. Lawrence Flour Mills with a daily capacity of 3,000. The largest plant of the Maple Leaf Milling Company was placed at Port Colborne at the entrance of the Welland Canal at the eastern end of Lake Erie. This mill has a daily capacity of 14,000 barrels. While the Western Canada Flour Mills have their largest mill at St. Boniface, Winnipeg, they have also a mill at Goderich with a daily capacity of 2,500 barrels. In the western provinces nearly every city has one or more plants operated by the larger companies. The Ogilvie's have a mill also at Fort William. Medicine Hat in Alberta, is an important milling centre with three large mills. Most of the flour shipped to the Orient is ground in the western plants.

While the development of the roller process of milling solved the technical problem of how to convert hard spring wheat into flour of the highest quality, the change-over to the new method of milling had an important influence upon the size of the individual milling enterprises. The larger companies were able to install the latest types of machinery in their plants, and, with the competitive advantage conferred upon them by superiority achieved in this way, were

able to eliminate many of the smaller flour mills which were their competitors for the market. Until this time the smaller mills had competed with the larger upon fairly equal terms. In 1891 there were in Ontario alone 1,078 flour and grist mills. In 1911 the number had fallen to 574.⁴ In 1891 in all Canada there were 2,550 flour and grist mills; by 1911 this number had become reduced to 1,141. Since 1911 there has been a very slight increase. The number now stands at 1,319.⁵ The trend towards large companies operating one or more large plants continues although the small flour miller has not altogether disappeared.

While the number of enterprises was becoming smaller, the amount of capital invested in milling was on the increase. In 1891 capital investments in plants amounted to \$23,039,041; by 1911 the amount had almost doubled, being \$42,905,687. Meanwhile, the number of employees remained practically stationary. In 1928 the capital invested was placed at \$63,514,575, while the number of employees had actually decreased from the number required in 1911. Yet in 1928 the gross value of the product was estimated at \$195,698,124, compared with an estimated value in 1911 of \$82,494,826. This represented a very great increase, even after proper allowance was made for the change in the price level during the interval.

Of the total number of 1,319 flour and grist mills listed in 1928 by the Bureau of Statistics, 896 were reported as devoted to the production of feed stuffs other than flour. Mainly, they represented small grist mills. This leaves 423 flour mills. The daily capacity of these flour mills was placed at 120,855 barrels of flour per day of 24 hours. Of this

⁴The figures collected by the Bureau of Statistics in 1901 were limited to mills employing five hands or over and cannot be compared with the data for 1891.

⁵1928.

capacity the production of 91,560 barrels was under the control of 9 milling companies, four quite large and five more of substantial size. These companies operated 32 plants. The remaining 391 flour mills, therefore, were to be credited with a total daily capacity of 19,295 barrels, which would average approximately 50 barrels per day for each mill. The four large milling companies mentioned above, Ogilvie's, the Maple Leaf, the Lake of the Woods, and the Western Canada, together represent over one-half of the total flour-milling capacity of Canada.

From these figures it is obvious that the Canadian milling industry has not lagged behind in the general trend towards large-scale production. Hand in hand with large-scale production there has developed concentration of management. In the flour milling industry, just as in the grain trade a small group of executives exercise control over the bulk of the business. Moreover, certain of the larger companies, such as the Ogilvie Flour Mills Company and the Maple Leaf Milling Company, have or have had upon their directorates the representatives of large elevator companies.^a A close relationship between the elevator company and the milling company ensures to the latter a regular supply of the amount and the quality of the wheat it requires to maintain its flour, and conversely gives the elevator company a definite market in Canada for a certain proportion of its handlings.

Following the lead of the Ogilvie Flour Mills Company each of the larger milling enterprises constructed its own line of country elevators as feeders. These elevators ship to the mills the choicest wheat secured and pass the balance forward into commerce. The Ogilvie Flour Mills Company has 155, Lake of the Woods Milling Company has 113, and the Western Canada Flour Mills Company, 84 country

^aSee page 325.

elevators. The country elevators formerly operated by the Maple Leaf Milling Company were acquired by the Federal Grain Company, which, until recently at least, has represented substantially the same interests.

The integration of the large milling companies has proceeded in other directions as well. The Maple Leaf Milling Company entered the bakery field in a large way in September of 1925 when through Canadian Bakeries, Limited, it acquired a group of bakeries in western Canada. It has since taken over or organized three other bakery chains: the Canada Bread Company, which first appeared as a subsidiary in 1928; Dominion Bakeries, Limited, in the same year; and, more recently, Eastern Bakeries, Limited, in the Maritime Provinces. In connection with forwarding flour from its mills the company owns, through a subsidiary, a modern lake freighter with a capacity of 2,400 tons. The Ogilvie Flour Mills Company owns and operates a fleet of eleven lake steamers, which carry package freight westbound from Montreal to the head of the Great Lakes and wheat eastbound to the company's mills at Montreal. It also operates a barrel factory at Montreal, having a daily capacity of 3,000 barrels, and a package plant at Winnipeg, where it makes all its own cereal containers. During the last three years it has acquired, or become closely associated with, a chain of Canadian bakeries, which operate in Montreal, Ontario, and in western Canada. The Lake of the Woods Milling Company controls the Inter-City Baking Company, Limited, with bakeries in central Canada, and the Inter-City Western Bakeries, Limited, with branches west of the Great Lakes. The bakeries of the Western Canada Flour Mills Company are controlled through the Purity Baking Company, Limited, Toronto, which has eight branches in that and neighbouring cities, two in Montreal, and four in the western provinces.

Thus in the domestic market the trend is towards the organization of inter-related groups of interests representing elevator companies, flour milling companies, and bakeries, in order to control the flow of wheat and its products from the time it leaves the farmer's wagon until it is delivered as bread at the door of the consumer.

IV. THE EXPORT TRADE IN FLOUR.

Interesting as are these domestic developments, the maintenance and expansion of an export trade for flour ground in Canada must continue to be a matter of the greatest importance to Canadian millers. The present capacity of Canadian mills is based on the presumption of a large export trade. If it is calculated that roughly $4\frac{1}{2}$ bushels of wheat will produce a barrel of flour, for the crop year of 1928-29, approximately 40,878,000 bushels of wheat were milled for domestic consumption. On the above basis this represents in round figures 9,084,000 barrels for Canadian use. The Canadian mills with their present capacity would be able to grind this amount, if running at full time, in 76 days. The rest of the year they would have to rely upon the foreign flour market to keep them busy. During the crop year 1928-29 the total amount of flour actually manufactured was 20,893,000 barrels. This represents 175 days full employment, or, to state the fact in a slightly different way, the maximum capacity of the Canadian flour mills is about double actual production performances.

The value of the wheat flour exported from Canada for the year of 1929⁷ amounted to \$65,117,799. As an export commodity, it was only exceeded in value by wheat itself and newsprint paper. The volume of flour exports has grown in amazing fashion since 1891. In that year flour

⁷The figures cited here are for the fiscal years ending March 31, and therefore differ slightly from those given for the crop year.

exports were valued at \$1,388,578, for 1901 at \$4,015,226, for 1911, \$13,854,790, for 1921, \$66,520,490. The fall in the price of flour in recent years has decreased the total value of exports for later years, but in 1921 the number of barrels exported amounted to 6,017,032, as compared with 11,405,728 barrels reported for 1929.

The really great market for Canadian flour is to be found in Great Britain, but it is no exaggeration to state that Canadian flour has an unexcelled reputation for quality and finds a market wherever flour is imported. The British market up to the present time, the least hampered by trade restrictions, has grown with the expansion of the Canadian west. In 1891 Canada exported to the United Kingdom flour valued at \$851,912, in 1921 flour valued at \$28,896,091. In 1929 exportations to the mother country were valued at \$16,971,984.⁸ No other country gives Canada a trade in this commodity of like magnitude. Before hostile tariffs barred the door, there was the promise of a large market for Canadian flour in the United States. In 1921 the United States imported Canadian flour to the value of \$12,023,090, but by 1928, her importation from Canada amounted to the trifling value of \$13,217.

Next to the United Kingdom there are a number of countries which are important markets for Canadian flour. The trade with China and Hong Kong in 1929 amounted to over \$11,000,000. Germany and the British West Indies each took flour to the value of over \$6,000,000 in 1929. The Scandinavian countries bought Canadian flour valued at over \$5,000,000. The trade with Newfoundland was over \$2,000,000. Greece, the Irish Free State, and the Netherlands, followed with purchases of over \$1,250,000 each. The balance of the Canadian export trade in flour was distributed over a

⁸See p. 437. Re official export statistics.

great number of countries, but in no instance did its total value with an individual country exceed \$1,000,000.

V. BASIS OF THE EXPORT TRADE.

This immense trade has been built up through the energy of the Canadian milling companies. The men at the head of these companies have not only been leaders in their own field, but throughout the years the milling industry has provided a large number of leaders who have made their mark in finance and industry generally. Operating with large units of production, the principal Canadian millers have been able to make use of all the economies and refinements of large scale production. Each of the larger companies has its own chemist and research departments. These departments have played an important role in guiding the wheat buyers in their selection of the best milling wheats. They have also enabled the mills to manufacture and standardize flour of the very highest quality. Despite certain changes in the quality of wheat from year to year, well-known brands of flour maintain their quality without marked variations. Some of these brands are known all over the world.

In selecting wheat the Canadian millers have favoured the three upper grades. Even when a low-grade flour is desired for export to meet the demands of a certain market, the mills have found it more economical to use a high grade wheat and to change the mode of extraction. In 1924, giving evidence before the Royal Grain Inquiry Commission, the western general manager of the Lake of the Woods Milling Company stated that his company had milled about 14,000,000 bushels of the crop of the preceding year. The percentages of the grades used were as follows:

No. 1 Northern.....	56.6
No. 2 Northern.....	25.2
No. 3 Northern.....	16.3
No. 4	1.3
No. 5	0.6
	100.0

Similar evidence was given by the representative of the Western Canada Flour Mills. He reported that on 18 months' grinding of 15,366,000 bushels the percentages of the grades used were:

No. 1 Northern.....	73.9
No. 2 Northern.....	14.7
No. 3 Northern.....	9.2
Nos. 4, 5 and 6.....	2.2
	100.0

The western manager for the Ogilvie Milling Company gave figures for the Winnipeg mill only. These showed the following percentages:

No 1 Northern.....	38.26
No. 2 Northern.....	21.31
No. 3 Northern.....	39.89
No. 4 Northern.....	0.54
	100.0

The views of these millers with regard to the lower grades of wheat was that a fairly good flour might be made out of Four, Five, and Six, but it would be commercial suicide to

attempt to use these grades as a matter of regular business. This supports the generally recognized view that Canadian flour maintains its position on the world's market purely because of the very high quality offered, and that at a reasonable price. The millers rightly hold that anything that would disturb the reputation abroad of Canadian flour for quality and strength would cut down almost automatically the range of demand in the foreign market.

In addition to the advantage of being able to procure an adequate supply of high grade wheat most of the Canadian mills enjoy a supply of cheap power. This is an important factor in keeping down the cost of production and affects the competitive power of Canadian mills in relation to those of other countries. Good wheat and cheap power are the two natural advantages the Canadian millers possess.

On the other hand, the Canadian millers have had to contend with certain difficulties inherent in their situation. The transportation of flour is not so simple a problem as that of wheat handled in bulk. Flour has to be bagged or placed in barrels or other containers. This means considerable handling in the case of small units, and adds to the cost of transportation. Moreover, as a more valuable commodity than its raw material, wheat, there is a basis for charging a high freight rate on flour. Higher freight rates are in fact charged, and the millers have complained that this is an unwise discrimination. They point out that it increases the difficulty which the Canadian mills encounter in selling their flour in competition with foreign millers who import and grind Canadian wheat in proximity to the market. Another factor of importance enters into the situation—the disposal of offal. No. 1 Northern wheat yields from 71 to 74 per cent flour, the balance being offal, suitable for stock-feeding purposes. The grades lower than No. 1 Northern show a

slightly higher percentage of offal. Canada does not offer anything like as high a price as European markets do for such offal. This means a lower return in this respect for the Canadian miller.

But the most serious obstacle to the extension of the Canadian flour trade is undoubtedly the tendency of various foreign countries to promote home industry by discouraging the importation of flour. This tendency appears even where no objection is raised to the importation of Canadian wheat. One reason for this difference in policy is that even if a country finds it necessary to import wheat from abroad, home grinding will tend to increase the supply of offal for stock-feeding purposes. Thus, some countries are good customers for Canadian wheat, although they buy little Canadian flour. Three examples may be cited. In 1929 Japan imported wheat valued at \$20,397,748 and flour valued at \$238,413. For the same year the exportation of wheat to Italy amounted in value to over \$19,146,578, with flour exports valued at \$393,861. Belgium imported wheat to the value of \$18,762,087 from Canada in 1929, but her importations of flour were valued at \$30,887.

A peculiar situation exists in the competition between the Canadian mills and those situated at Buffalo in the United States. The American millers at this point are located on one of the chief shipping routes of Canadian and American wheat to the Atlantic seaboard, and they are able to tap the abundant supplies as they move through. Moreover, they are also able to buy at Fort William cargoes of wheat of high milling value, especially selected for them. While there is the high American duty against Canadian wheat imported into the United States for domestic consumption, this duty does not apply when Canadian wheat is ground

in the United States and the product exported. Hence, the Buffalo millers are able to do an export trade in flour based on Canadian wheat. In these circumstances they offer very sharp competition to the mills located in Canada. It has been urged that Canada should impose an export duty upon wheat entering the United States equal to the import duty imposed by the United States against Canada. Such a duty would strike especially at the Buffalo millers.

This suggestion has been strongly condemned by certain farm leaders in the Canadian west on the ground that it would deprive Canada of a market for a certain volume of wheat now used by these millers. On the other hand, it has been contended that it would benefit the Canadian millers, who would be in a position to invade the market now served by American mills purveying flour produced from Canadian wheat. It is argued that what the western grain grower would lose in the American market he would make up in the domestic market. The truth seems to lie somewhere between these two positions. The effect of a Canadian export duty probably would be at first to embarrass greatly the Buffalo millers and to expand somewhat the Canadian export market. But it is doubtful whether this expansion would give a market for Canadian wheat of equal volume to that previously furnished by the Buffalo mills. The latter would be forced to grind American wheat, but it is quite conceivable that by skilful blending and treating they would be able to turn out a product not markedly inferior to their present output, though probably at somewhat higher cost per barrel. Moreover, there are certain markets, such as Cuba, that offer a protected market to the American mills. In these circumstances it is possible they might retain a considerable proportion of their foreign

market. An incidental effect of such a regulation would be to deprive Buffalo of part of the advantage she now possesses over Minneapolis and other American milling centres.

VI. COARSE GRAINS.

There is a very limited domestic market in Canada for coarse grains for milling purposes, and a large industry based on milling for export has not been built up. In 1929 the mills ground 11,457,530 bushels of oats, chiefly into oatmeal and rolled oats. An additional quantity was utilized by the chopping mills for the production of feed. But the bulk of the Canadian oat crop is consumed on the farms and does not enter into commerce. The value of the oatmeal and rolled oats produced in 1929 was approximately \$8,000,000, and of this amount exports represented \$3,000,000, and home consumption the balance.

Barley in Canada is chiefly used for malting purposes. There are two large companies engaged in the business of malting. These are the Canada Malting Company, with plants at Montreal, Toronto, Winnipeg and Calgary, and the Dominion Malting Company, established at Winnipeg. In addition to these a number of small houses in connection with breweries and distilleries take a certain amount of this grain. In all, these enterprises use annually between 5,000,000 and 6,000,000 bushels. In the circumstances Canadian barley at the present time is badly in need of a larger market, since it has not altogether overcome certain difficulties in connection with its being used to supply the foreign market for malt barley. There is a possible market in eastern Canada for feed if it were properly exploited. Eastern Canada imports a substantial volume of corn for feeding purposes. From the standpoint of food value barley would serve the purpose equally well if its merits were once estab-

lished. If the eastern feeder could be induced to make this change, the effect would be to give the Canadian grower an additional market for his barley amounting to 10,000,000 to 12,000,000 bushels annually. One of the difficulties met with in attempting to secure this market is the relatively high freight rate on barley when shipped to local points.

Canada does not produce a very large flaxseed crop. In 1927 it amounted to 4,884,600 bushels. Of this amount 940,330 bushels were crushed in western Canada and 1,642,937 bushels east of the Great Lakes. In some years there is scarcely sufficient production to serve the domestic market.

The consumption of rye bread is so small in this country that it makes the milling of rye in Canada of no importance. Of the 1927 crop less than 50,000 bushels was milled for Canadian consumption.

CHAPTER XVII

THE EXPORT MARKET FOR CANADIAN GRAIN

UP to the end of the crop year, 1928-29, the possibility of a difficulty in finding a market for all the wheat that Canada would be able to grow and export never seriously entered into current calculations. Public men viewed with equanimity the northward march of the wheat area, and the increased volume placed upon the market was regarded as giving a hint of the importance of the final position that Canada would occupy in the world's grain trade. Undoubtedly from time to time there were complaints that wheat prices had fallen to unremunerative levels, but these conditions were looked upon as temporary, and it was confidently expected that the market would shortly recover and that expansion in wheat growing would be able to continue. The experience of the last two years, with prices decidedly below the cost of production, with no marked reduction in world surpluses, and with Russia no longer a vague spectre but looming up as a concrete threat, has changed the situation, and Canadians do not feel so sure of their future in wheat growing. Unquestionably the position of Canada is not so bad as it is felt to be at the present time, but it is sufficiently threatening to give real grounds for serious consideration. The present chapter endeavours to set forth the main features of the present situation.

I. CANADA ON THE CREST OF THE WAVE.

The wheat crop of 1928 was the largest that Canada ever harvested. The final official estimate placed the total

at 567,000,000 bushels. During the crop year Canadian exports of wheat and wheat equivalents in flour amounted to 407,000,000 bushels out of a world total of international shipments of 943,000,000 bushels. Canada's share in the world's trade for this period was thus approximately 42 per cent of the whole.¹ Her shipments in excess of Argentina, her nearest competitor, were 182,000,000 bushels. Canada appeared to have become the dominant figure in the international wheat trade. While the volume of exports for that crop was due to a particularly large crop, the position represented the culmination of years of steady progress. Between 1909 and 1914 the average net annual exports from Russia amounted to 164,500,000 bushels; from the United States to 110,000,000 bushels, and from Canada to 95,600,000 bushels.² Close behind Canada during this period was Argentina with an average of 84,700,000 bushels of net exports, while Australia, with an average of 55,200,000 bushels, Roumania with 54,620,000 bushels, India with 49,800,000 bushels, and Hungary with 43,140,000 bushels, contributed a substantial share of the world's requirements.

The exports for the years between 1923 and 1928 showed Canada to be the chief beneficiary from the default of Russia. She was in first place with an annual export average of 297,500,000 bushels. The United States, despite increasing population, was second, with an average export per year of 174,000,000 bushels, yet was less than Canada by over 100,000,000 bushels. Argentina had increased her exports and ranked third, with an average of 142,200,000 bushels. Australia followed with 92,000,000 bushels. As a calculable factor in the wheat markets of the world, Russia

¹ The figures quoted here include Canadian exports of wheat manufactured into flour.

² *The World Wheat Situation, 1928-9. Wheat Studies of the Food Research Institute*, vol. vi, December, 1929, p. 100.

seemed to have disappeared. She was in and out of the market with sporadic shipments. Her best accomplishment had occurred with the crop of 1926 when her exports amounted to 49,200,000 bushels, but in the following year her shipments had dropped to 7,000,000 bushels.

On account of changes in the boundaries of the various countries and the organization of new countries it is not possible to compare in detail the exports from the Balkan countries for the later period with those given for pre-war years. Such figures as are available suggest a reduction in the exports from that region. The average annual shipments for the four countries, Hungary, Bulgaria, Jugo-Slovakia, and Roumania, between 1923 and 1928, was estimated at only 36,100,000 bushels in all. Pre-war shipments from Roumania alone exhibited an annual average of over 50,000,000 bushels. There was also a striking decline in the supplies received from India. Between 1923 and 1928 the annual average exports had fallen to only 17,200,000 bushels.

An analysis of the reasons for the decline in the export of wheat from these European countries and from India is not necessary here. It is sufficient to observe that on the basis of performance through a period of years it seemed a safe working assumption that Canada had consolidated her position as the world's leading exporter of wheat.

II. ACCUMULATING STOCKS AND DECLINING PRICES.

Although Canada had disposed of a larger quantity of wheat than in any previous year of her history, there remained a carry-over estimated at 104,000,000 bushels on August first of 1929. While this quantity exceeded her average annual exports previous to the Great War, the amount was not considered to be disquieting. The summer of 1929 had not been favourable to the growth of grain in

the Canadian north-west. It was well-known that the 1929 crop would be decidedly short. Actually, although of very high quality, the yield proved most disappointing. Wheat averaged 11.6 bushels to the acre, or around four bushels per acre below the 10-year average. The total yield was estimated at 304,520,000 bushels, or not much over one-half of the crop of 1928. When the carry-over from the crop of 1928 was added to the total crop of 1929, Canada had in hand approximately the amount she had exported in the previous year. Hence it was considered that the surplus carried over from 1928 would be readily absorbed by the deficiency of 1929. The point that escaped general consideration was the dimension of the carry-overs accumulated by other countries.³ In the opinion of competent investigators the up-building of carry-overs in 1928-29 was practically a world-wide phenomenon to be accounted for mainly as the result of a huge world crop in 1928, following one of good size in 1927.⁴

The first element in the Canadian situation was the fact that Canada found herself in competition, for the disposal of her carry-over and 1929 crop, with surpluses in the United States and Argentina. A second element was the absence of reliable information with respect to the supplies available in Europe. It was not known how large were the stocks in hand there when the Canadian crop of 1929 was harvested, but they proved to be larger than had been estimated. Moreover, the 1929 crops of France, Italy, and Spain, taken together, were larger than usual by approximately 100,000,000 bushels. These conditions all favoured the development in the early part of the season of a sluggish demand, in short, a buyer's market for Canadian wheat.

³For details of carry-overs, see p. 74.

⁴*The World Wheat Situation*, p. 62.

During the course of the autumn of 1929 there occurred the disastrous break in stock prices, followed by a general depression. The trend of all commodity prices was downwards, and it is well known such a decline particularly affects primary products such as cereals. This depression prevailed in Great Britain and in most parts of Europe. In the far east the fall in the value of silver made trade with China difficult. With plentiful supplies on the horizon and with hard times in the offing or actually being endured, consumers of imported wheat pursued the natural line of conduct. They bought as little as they could and they waited in the expectation that prices would become lower.

But with a small crop of high quality to sell, the Canadian grain grower did not relish the prospect of disposing of it at a price per bushel below the cost of production and much below the price which he had received for the larger crop of poorer quality produced in 1928. Moreover, there was a general conviction, due to lack of exact knowledge of quantities available, that, before the crop year was out, Europe would have exhausted other available supplies and would have to come to Canada to buy. The grain-grower thought the short crop of 1929 could be marketed eventually at the price levels of 1928. Undoubtedly lying behind this view was the sub-conscious belief that the world could not get along without Canadian wheat, and with this belief as a basis it was held that the Canadian grain-grower was entitled to a price that would maintain him in a certain standard of living.

As between Canada and Argentina, the competitive situation was, that Canada possessed a large volume of storage space that would enable her to store wheat and hold supplies off the market. Moreover, a large part of the Canadian crop was under the control of the Wheat Pool, which

represented a direct producer interest in the price received, while the Argentine crop was passing through the hands of wheat merchants chiefly interested in handling and turnover profits. Argentina did not possess the same storage facilities nor was the credit situation there as favourable to the grower. There was, therefore, upon Argentina a more severe pressure to sell. There appeared to be little resistance from sellers to a decline in price; competition between buyers determined the amount Argentina received.

The upshot of the whole situation, as far as Canada was concerned, was that during the autumn months of 1929, the normal season of an active trade, Canada sold and shipped relatively little wheat. The market was in the doldrums. The price demanded was out of line with the world's markets. The Argentine supply was worked off with despatch, and Canada and the United States were practically out of the market.

As the general trade depression became more serious, while Europe continued to exist without recourse to large supplies of North American wheat, the market price of Canadian and American wheat fell from its own weight. By June of 1930 the price reached a point equal to that of 1914, but then recovered slightly and became somewhat higher. At prices between 95 cents and \$1.00 for No. 1 Northern in store at Fort William a fair export business began to be done, but there was no rush of buyers. The world carry-over at the end of the crop year of July 31, 1930, was almost as large as that which encumbered the market the year before. Canadian exports for wheat and wheat flour in terms of wheat for 1929-30 were placed at 186,268,212 bushels, as compared with average annual exports between 1925-26 and 1929-30 of 308,853,540 bushels. Meanwhile, as has been previously noted, the price of wheat

had fallen, and it continued to decline until at the end of 1930 it was just over 50 cents a bushel.

III. THE POLICY OF HOLDING WHEAT.

The policy of holding Canadian wheat for a better price was widely debated in Canada during the autumn of 1929. This policy was associated particularly with the Wheat Pool with its large volume of handlings, but many independent traders, while silent upon their trading policies, appear to have taken the same view of the market. No other explanation seems possible to account for the divergence in prices between the Winnipeg market in futures and Liverpool. In the face of autumn hedging pressure the Winnipeg market maintained a firm position above Liverpool despite relatively meagre export sales. Moreover, it is known that important speculators later took heavy losses on account of their long position in the market. Undoubtedly the situation was aggravated by the spirited defence put up of holding wheat for a higher price. The publicity that was given to this viewpoint brought a great number of the public into the market as purchasers of wheat futures, and this helped to prolong the period during which prices were out of line with world values. To sum the situation up: the psychological atmosphere created by the harvesting of a small crop of especially high quality and the idea that importing countries must have Canadian wheat, combined to make the grain-marketing interests of Canada preponderantly bullish during the autumn months of 1929.

The policy of holding wheat off the market in order to secure a higher price has been compared with schemes to valorize coffee or to enhance the price of rubber. It differs, however, in some respects from these schemes. In the first place, wheat is a commodity widely produced throughout

the world and easily replaced by substitute foodstuffs, such as other cereals and potatoes. Further, with coffee and with rubber there was a comprehensive unified plan with each commodity to increase prices, but with wheat there was no such plan. The organizations responsible for withholding wheat from the world's markets were not consciously united, nor did they form a single unit for such a purpose. Moreover, the ineffectiveness of the attempt to hold prices high became apparent before the grain-grower could be influenced in his policy of production. Had the marketing policy of Canada and of the United States succeeded in keeping the world price of wheat at a relatively high level, the victory would ultimately have been dearly bought by a prolonged, unnatural expansion of the acreage devoted to wheat. By the spring of 1930, when the Canadian grain-grower was putting in his 1930 crop, the policy of holding wheat off the market was already perceived to be a failure. Production statistics for 1930 showed a reduction in Canada of three per cent in the acreage devoted to wheat and of approximately eight per cent for 1931.

But if in the nature of the case no victory was to be gained in attempting to maintain high wheat prices, there is this to be said for the policy of the autumn of 1929. Had the Canadian sellers of wheat aggressively forced sales at that time by drastic price reductions, had they set out to match offers against the sellers from Argentina, the price of wheat probably would have fallen to a level below that to which, during the course of a year, it subsequently fell. Wheat in Canada enters so intimately into the agricultural, mercantile, and financial life of the country that had it registered a spectacular decline in value in the autumn of 1929 exceeding that suffered by share capital, the combined effect of both slumps would certainly have produced

an unexampled crisis in Canadian business affairs. It is not to be forgotten that important Canadian banking interests supported the decision to hold wheat. While the difficulties that have been created by the holding policy of 1929 are known and are being endured, what we really cannot know is what would have occurred if the contrary policy had been followed. As a method of limiting losses to the country at large the price-reduction resistance policy of 1929 is susceptible to some defence. While the course of events has made it abundantly clear that the Canadian wheat grower, in the interests of a higher standard of living for himself, cannot impose his will on the foreign buyer, yet it is doubtful, in the peculiar circumstances of trade and industry in Canada in the autumn of 1929, whether a policy of forcing wheat sales by unexampled price-cutting would have better served the interests of the country as a whole.

IV. EUROPEAN REACTIONS TO PRODUCER DIFFICULTIES.

Meanwhile certain conditions, affecting the export market for Canadian wheat, have arisen in European countries that do not have their essential root in what happened in Canada in the autumn of 1929. In so far as the policy of withholding Canadian wheat tended to keep world prices at a higher level at that time than would otherwise have been the case, the obvious effect was to help the European producer. But at present there is a general movement in European countries, including Great Britain, to aid nations growing wheat and thereby to stimulate domestic wheat production. Present European wheat policy takes the form either of raising the already high tariff of duties on the importation of wheat or flour, or of requiring domestic millers to use a generous percentage of home-grown wheat in the production of flour. Both methods have as their aim the reduction of wheat

imports and the creation of a better market for native supplies. It is quite likely that such a policy, for a time at least, will contract the market for international shipments. Canada as a large exporter is vitally interested.

The reason for this European policy is to be found in several circumstances. It is the natural offshoot of the existence in Europe of an underlying element of fear, which has not diminished appreciably as the years following the war have passed by. The agricultural interests of western Europe have taken steps to make themselves beneficiaries of this policy. Indeed, they have always sought, not without some success, except in Great Britain, to secure protection against the competition of agricultural products from the fresh soils of the new world. They have only been held somewhat in check in the past by the food requirements of large industrial populations. Their efforts at the present time appear to be yielding them somewhat greater success.

Undoubtedly, the desirability of producing as large a domestic supply of wheat as possible makes a stronger appeal to the European countries than it did before the war. This appeal appears to be strengthened by the high tariff policy of the United States, which threatens to close further the market for European manufactures. ~~Europe is a heavy debtor to the United States,~~ and if Europe cannot sell manufactured goods to the United States in sufficient quantity, she is unable to create credits upon which imports can be financed or with which she can pay her debts. Hence the policy of the United States is the most important factor in leading to a state policy in Europe of reducing as far as possible the necessity for imports. In addition, it must be noted that the establishment of immigration quotas into the United States especially limits the opportunity of surplus European populations to move. For a country like Italy,

with overflowing population and restricted fields of emigration and of commerce, the natural tendency would be to live more fully, if possible, within the resources of the nation itself. Such a policy jibes well with imperialistic ambitions which may have their origin in other conditions.

In addition to these reasons, European countries are also confronted with the fact that the general depression has struck agriculture as well as other kinds of industry. As a recent writer has pointed out: "The agricultural crisis is not particular to a given country or to a given group of countries; it is universal. Canada suffers as much as Poland, and the French peasant complains as much as the Australian. Everywhere the sale price of cereals falls below the cost of production."⁵

The policy of making imported wheat a dear commodity has certain secondary results of great significance to the wheat exporter. By raising to their people the price of wheat and flour, the governments of certain European countries are making wheat bread a dear food. Consequently, as a relatively expensive article of consumption, wheat bread tends to become a luxury and its use tends to be economized. Cheaper cereals and foodstuffs are substituted wherever possible. The per capita consumption of wheat falls accordingly. This was one result of high wheat prices in Europe in 1929-30 which defeated the calculations of North American sellers, who believed that Europe would have to come to them for supplies during the winter and spring of that crop year. Europe did not demand so large a volume of wheat as usual because she was making use of substitutes and less wheat was eaten.

Another result of the situation has been the intensified work of the biochemical staffs attached to flour mills. The

⁵Delaisi, *Revue D'Economie Politique*, Sept.-Oct. 1930. p. 1329.

larger mills, confronted with the necessity of grinding larger proportions of home-grown wheat of inferior strength, have set out to repair the deficiencies of nature by the resources of chemistry. By laborious experimentation they have found out methods of using a larger supply of weak wheat in the composition of their mixes without unduly deteriorating the quality of their flour. The flour so produced may not compare with the product of strong wheats and may cost more to produce per barrel, but it serves its purpose and enables the mills to work into line with national practice. The tendency of such a practice is to reduce, for the present at least, the demand for strong high-class wheats, even though it can be demonstrated that the best improver a European miller can use to strengthen his domestic blend is a percentage of Canadian Northern spring wheat.

Beyond pointing out that the tendency of these measures is to restrict the world trade in wheat it is unsafe to venture a prediction. It does not seem possible that in the present phase of the economic development of the world, a policy of such far-reaching economic isolation can be maintained indefinitely. Western Europe can hardly afford to push up markedly the price of bread for large industrial populations, though it is conceivable that the standard of living may be lowered permanently by the use of bread of inferior quality. Government policy in western Europe is likely to be influenced by the course of world prices for wheat and the volume of world production. The weather in the various wheat-producing zones introduces into the situation an incalculable element. If western Europe has a series of relatively low yields, while the chief wheat-exporting countries are favoured with good crops, it will be difficult for those countries that are now putting up the bars against wheat importations to hold to their present line of policy.

V. THE POSITION OF RUSSIA.

Undoubtedly the part that Russia will play in the export of wheat in the immediate future has given rise to more apprehension than any other single factor in the situation. The probability that Russia would appear on a vast scale in the world's wheat markets has been actively canvassed by students of the subject for the last ten years. As late as the summer of 1928 the present writer expressed the view that the Canadian wheat grower need not fear the return of Russia to international trading in wheat.⁶ This opinion was based, first, on the fact that the population of Russia, under crowded conditions of landholding, was continuing to increase at a rapid rate, thereby creating an increased home demand for foodstuffs; and, secondly, on the idea that the Bolshevik revolution would mean a greater degree of welfare to the Russian peasant than under the preceding regime when exportations of wheat were largely obtained at the expense of his under-nourishment. Increased population and increased per capita consumption at home were the two factors that made it appear likely that when Russia returned to the wheat export market, her supplies would be moderate in amount and capable of being offset, probably by waning exports from the United States.

Over a short period of time the prediction made in 1928 has not been borne out by the course of events, as it was based possibly on a too favourable view of the results of the Russian revolution. There appears to be little doubt that since the "Five Year Plan" has been put into operation, the per capita consumption of wheat in Russia has not increased, but has actually declined. The "Five Year Plan" aims at building up quickly the industrial armature of Russia by a great programme of capital construction, and in order to pay

⁶Report, Alberta Institute of Co-operation, 1928, p. 142.

for the colossal purchases of machinery and other material supplies being imported from abroad to accomplish this end, heavy exports of goods to the world's markets by Russia are necessary. Agricultural production is working under forced draught, and the Soviet government is exploiting the peasant to the fullest extent possible in order to accumulate, for financing purposes, as large a volume of exports as can be assembled.

A competent observer, recently in Russia, says: "Soviet Russia is a land in which force and fear reign supreme. For cold and merciless fanaticism on a grand scale the world has probably never witnessed anything to compare with the liquidation of the kulaki as a class. This liquidation involved the dispossession of millions of humble peasants and the exile or execution of numberless others." . . . "The burden of privation which the Russian people have had to bear in providing capital (i.e. for the 'Five Year Plan') has required all their reserve of Asiatic resignation to the inscrutable decrees of Fate. Whether the Soviet regime can survive the present difficult situation with its acute shortage of consumption goods depends primarily upon the incredible capacity of the Russian population to endure strain."⁷

Under such a regime it is evident that Russia for a time at least may be able to export large quantities of wheat. The report of the British Board of Trade for the first quarter of 1931 shows that Great Britain for the first time since the war bought more wheat from Russia than from anywhere else. Canada maintained her rank as the second largest wheat seller to Great Britain, but Argentine dropped from first place to third and the United States from third place to fifth.⁸ The magnitude of the Soviet's efforts warrants the

⁷Calvin B. Hoover, *Papers and Proceedings of the Forty-Third Annual Meeting of the American Economic Association*, 1930, pp. 43-4.

⁸See report *Time*, May 11, 1931.

view that Russia is capable of expanding her exports of wheat during the next few years to a point where they will at least equal her pre-war shipments. Her industrial programme implies the creation of immense foreign credits, and these can only be found in heavy exports of foodstuffs and other primary commodities. It should be pointed out that the Soviet government is essentially an urban-controlled regime and that the "Five Year Plan" involves the exploitation of the peasants for the advantage of the cities. There is a real danger that Russia by selling wheat below the real cost of production may bleed herself white to achieve her end, but thereby she may also impose great hardships upon the inhabitants of other nations.

To look a little farther ahead, if we assume the "Five Year Plan" to be successfully executed, this achievement should be followed by a reduction in the volume of wheat exports. With her industrial equipment gained, there should not be the same pressure to export in order to create foreign credits. More should be absorbed by home consumption. But the future is by no means clear. Apart from the possibility that the "incredible capacity of the Russian people to endure strain" may reach a limit and the "Five Year Plan" may go awry, the incalculable caprices of the weather which gave Russia an unusually large yield per acre in 1930, may produce conditions that will reduce Russian exportations. In the past Russia has not been exempt from years of light yield, and it is significant that part of its increased acreage is reported to be on sub-marginal land where moisture is a limiting factor. If weather conditions continue to favour Russian production, Russia can exercise a most disturbing influence upon the world's wheat markets, though it must be noted that it is unlikely that even Russia can continue indefinitely to sell below her real cost of pro-

duction while providing sustenance for a rapidly increasing population.

VI. OVER-PRODUCTION OR UNDER-CONSUMPTION.

The question whether world-wide over-production of wheat exists is always debated when two or three large harvests, depressing prices, succeed each other. But to form a conclusion on this point requires a comprehensive survey, not only of the whole trend of agricultural production, but also of the growth of population and the changes of the habits of people with regard to food. Such a survey should cover several decades at least in order to prevent undue weight being given to seasonal variations. After the war J. M. Keynes, in the *Economic Consequences of the Peace*, made such a study, and he concluded that while there was no deficiency of wheat, it was necessary for Europe in order to call it forth to offer a higher real price. The long-run situation was against the idea of over-production.⁹ Since Keynes wrote, the population of the world has increased, though it is probable the standard of living in parts of Europe has fallen, either due to business depression or to efforts to liquidate the war. The whole population of Europe was about 14,000,000 greater in 1924 than in 1911. In the Orient, with famines prevalent, the disturbed conditions of China and the fall in the value of silver have hindered the peaceful operations of international trade. These considerations do not support the view that wheat is suffering from over-production.

The term "over-production", however, is meaningless without being related either to prices or to cost of production. When supplies cannot be absorbed at current prices and surpluses begin to accumulate, there is said to be over-

⁹Keynes, J. M., *The Economic Consequences of the Peace*, Harcourt Brace and Howe, New York, 1920, p. 25.

production. Wheat has a definite place in the food economy of the world, but that place is not so secure that its price relationships can be forced out of step with those of other commodities. If wheat bread becomes a relatively dear food, the volume of consumption inexorably falls, simply because of the stress of human necessity to live within certain income limits. The drastic reduction in price which occurred during the crop year of 1929-30 represents an adjustment to bring wheat down to its usual scale of price relationships. Unfortunately, adjustments of this nature are never exact; at best they are only approximate, and in this instance the swing has been too far in the downward direction.

Such a fall in price brings into play another use of the term "over-production". When the price of a commodity produced under conditions of increasing costs per unit falls to a point where marginal producers are unable to market their supplies at remunerative prices, there is over-production. The vagaries of the weather leading to varying crop yields per acre means that every year there are sub-marginal producers for that season in some parts of the principal wheat-producing zones. But when the condition becomes general, with world crops of average magnitude returning a yield to the producer of less than cost, the situation can only be met by curtailment of acreage. Low prices do this automatically, unless there is government interference with the laws of supply and demand, by driving land capable of being employed in alternative uses out of wheat production.

VII. FUTURE OF CANADA'S EXPORT TRADE.

Although a survey of the world situation would indicate that competition will be exceptionally keen in the international wheat market at least for the next couple of years, there are factors that are favourable to the view that the

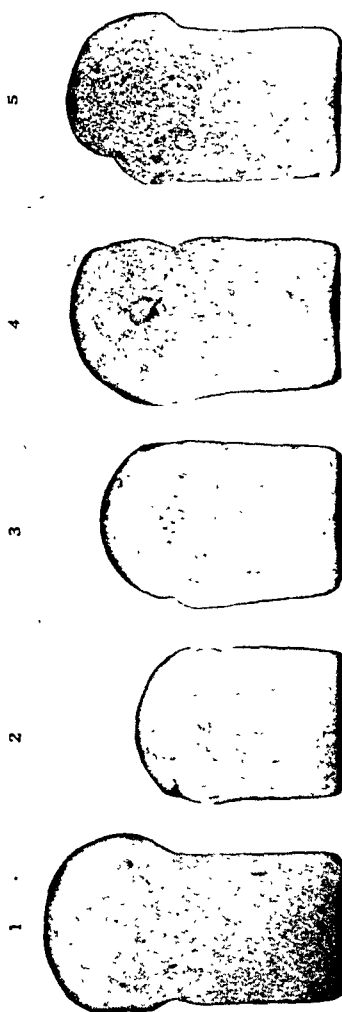
majority of Canadian grain growers can continue to grow wheat. The first point to be mentioned is the generally recognized high quality of Canadian Northern spring wheat. If foreign nations put a high duty per bushel on wheat in order to reduce the volume imported, the tendency of the foreign importer with his limited purchases should be to purchase the best quality of grain, since upon the highest quality the weight of the duty will be least oppressive. While high import duties in themselves are a deterrent to marketing wheat in certain countries of Europe, yet these high duties, in so far as foreign wheat is imported, should logically lead to a buyer's preference for "Manitobas."

Where the form of encouragement granted to home producers by foreign governments is the requirement of a certain percentage of domestic wheat to be milled for all flour, the kind of wheat most suitable for importation is a strong wheat which will give strength to the flour. This quality of strength has always been the distinctive virtue of Canadian Northern spring wheat that has attracted the foreign buyer. The value of Canadian wheat for this purpose has recently been strikingly shown by a series of bakings made from flour where a blend of Canadian wheat mixed with European wheats by the Grain Research Laboratory of the Board of Grain Commissioners for Canada was used.

These tests show that an addition of 20 per cent Canadian wheat increased the loaf volume of French by 16 per cent, of German by 23 per cent, of Danubian by 24 per cent, of Australian by 19 per cent, of Argentine (1930) by 25 per cent. Even small additions of Canadian hard spring wheat exert a marked improvement on the wheats commonly used in Europe, and the degree of improvement increases regularly with increasing percentages of Canadian wheat present in the blend.

Finally, it must be noted that Canada is only one of several countries engaged in the export of wheat upon a large scale. Other countries that may be mentioned are Argentina, Australia, Russia, and the United States. If the various methods now being employed by Europe to stimulate home production mean that, despite increasing population, there will be normally a smaller volume of wheat annually demanded from the export countries, the price of wheat will fall to a point where this annual supply demanded will equal the cost of production to the grain grower. With this point established, it then becomes a question which country is in the weakest position in the export market. A careful survey of all the factors that enter into this knotty problem seems to indicate that the exporters of the United States are in a more difficult situation than those in the other countries concerned. The perception of this fact has led public men in the United States to envisage the possibility of the United States ceasing to be a factor in the export market, though continuing to be an important producer of wheat for her immense home market. It would appear, therefore, that the main brunt of a possible reduction in world demand for wheat would fall upon the United States' growers rather than upon Canadian.

These considerations suggest that Canada can maintain her position in the international wheat market, but that in order to do so she must continue to rely upon the highest quality of hard strong varieties of spring wheats, such as *Marquis*, which have proved their value by actual experience in the markets of the world. The Canadian grain grower must also realize that in the long run ability to retain an important place in the foreign market is based largely upon cheapness in the cost of production and in cost of marketing. Reliability, quality, and cost, are the three elements that



*Courtesy of Dominion Grain
Research Laboratory, Winnipeg*

Effect of blending English Wheat with Manitoba Northern

1	100%	Average, No. 1 Northern, Loaf	Volume 2900 cc
2	100%	English, Loaf	Average 1860 cc.
3	80%	English, 20%	Average No. 1 Northern Loaf, Volume 2350 cc
4	60%	English, 40%	Average No. 1 Northern Loaf, Volume 2635 cc
5	50%	English, 50%	Average No. 1 Northern Loaf, Volume 2750 cc.



enter into the calculation of every purchaser of wheat and are decisive factors in determining where he will buy.

VIII. CANADA'S PRINCIPAL CUSTOMERS.

The United Kingdom is the largest single customer for Canadian wheat, but the official Canadian figures of exports are quite misleading and give the impression that the mother country buys very much more Canadian wheat than in fact she does, and that sales to continental Europe are less than they are. For instance, it has been pointed out that the returns for the crop year of 1928-29 from the Canadian customs reported exports of Canadian wheat, apart from flour, to the United Kingdom of 209,571,743 bushels, more wheat by 17,000,000 bushels than the United Kingdom, according to the British Customs, imported from all the world.¹⁰ The explanation of this anomaly depends on the methods employed by the two countries in recording exports and imports. In the case of Canada a large amount of Canadian wheat is exported through the United States. Much of this grain is unsold and lies in storage at Buffalo and other U.S. points until a buyer is found. But the Canadian customs requires the entry of some country of destination when grain leaves Canada. Since the United Kingdom is the largest single customer for Canadian wheat, it is the practice to report these exports passing through the United States as destined for Britain.

Actual returns issued by the United States officials of the reported destination of Canadian wheat passing through the United States in bond indicate that it is ultimately distributed among 47 different countries. This wide distribution is easy to account for, since there are sailings from New York to various ports with which Canada has no direct

¹⁰Evans, W. Sandford, *The Financial Post*, Aug. 21, 1930.

connection. Hence, reporting all grain shipped through the United States as destined for the United Kingdom is a major factor of error in Canadian customs reports recording the amount of wheat Canada ships to Britain. The effect of this error is to make it appear that the United Kingdom buys more Canadian wheat and foreign countries less than is actually the case.

An error of another sort creeps into the returns of the British customs. Imports into the United Kingdom are entered according to the nationality of the port from which the wheat is shipped and not according to the country of origin. From this it follows that when Canadian grain is shipped to the United Kingdom via New York, it is credited as an American import, and, on the other hand, when United States wheat is shipped from Montreal to Britain, it is recorded as an export from Canada. Since Canada ships more wheat by United States ports to Great Britain than the United States does by Canada, the British figure of imports of Canadian wheat is too low, just as the Canadian figure of exports to the United Kingdom is too high; neither record can be used to check the other. A sub-committee, composed chiefly of statisticians, considered this question at the meeting of the Imperial Conference of 1930 and reported that the material did not enable it to determine precisely what quantity of wheat consigned to the United Kingdom was actually grown in Canada.¹¹ From all information available it is probable that annual imports of Canadian wheat by the United Kingdom range from 70,000,000 to 90,000,000 bushels. Exports for the year of 1929-30, however, undoubtedly were below the former figure on account of the Canadian policy of holding wheat.

Canada also exports substantial amounts of wheat to the

¹¹*Imperial Conference*, Part II, King's Printer, Ottawa, 1931, p. 85.

Netherlands, Belgium, Italy, Germany, France, Greece, China, and Japan. The sales to these countries are very important in the aggregate. For the reasons stated above it is difficult to give exact figures of the quantities bought in each instance. Exports for the crop year, 1928-29, as shown by countries of destination, give the following figures:—the Netherlands, 22,121,680 bushels; Belgium, 16,577,716 bushels; Italy, 15,571,311 bushels; Germany, 14,693,724 bushels; France, 7,238,839 bushels; Greece, 7,057,061 bushels. But we have also to consider that the U. S. Bureau of Foreign and Domestic Commerce reports for the same period exports in bond of Canadian wheat from the U. S. Atlantic seaboard ports as follows:—to the Netherlands, 5,902,766 bushels; to Belgium, 7,351,656 bushels; to Italy, 6,473,900 bushels; to Germany, 6,743,615 bushels; to France, 10,376,717 bushels; to Greece, 1,780,630 bushels. In order to account for the wheat credited by the Dominions customs clearances as exported to the United Kingdom which does not reach there, it would appear that these additional amounts should be credited to the countries mentioned. Exports to Japan are given as 22,700,487 and to China as 9,131,370 bushels.

Of these markets that of Italy, France, and of Germany are threatened by the enactment of protective legislation. This menace does not seem to be so acute in the case of the other countries where large populations require the importation of food. But it must be noted that in every instance, if wheat prices go beyond a certain well defined level, the consumption of white bread is cut down and cheaper substitutes are used.

The importance of wheat leads to very little consideration being given to the market for coarse grains. But there is a not unimportant export trade in barley, rye, oats, and flax seed. Exports for the year ending July 31, 1929, were as

follows: barley, 40,147,702 bushels; rye, 5,751,232 bushels; oats, 12,828,385 bushels, and flax seed, 1,935,441 bushels. Apart from flax seed, which was exported almost entirely to the United States, the United Kingdom was Canada's principal customer. Next to the United Kingdom, Germany has been an important buyer of these grains. Her aggregate imports of these three cereals for 1927-28 amounted to about 8,000,000 bushels. The Netherlands took over 2,600,000 bushels each of barley and of oats and nearly 1,250,000 bushels of rye. Belgium, Norway, and Denmark also on occasions purchase stocks of coarse grains from Canada.

The desirability of barley as a field crop, especially in Manitoba, has led to a strong effort being put forth to expand the market for barley. Up to the present exports have chiefly been feed barley. After an investigation in the United Kingdom and in Europe the Canada Grain Act was amended in 1929, and new statutory grades were drawn to cover six-row and two-row barley and the Trebi variety. The aim was to segregate the barley to suit the various market requirements of the different industries. The high grades of six-row barley were defined to suit the Canadian maltsters, the British grain distillers, the yeast, malt food, malt extract and vinegar manufacturers. Similarly, two-row barley was defined to meet the requirements of the pot and pearl barley manufacturers of Canada, Great Britain, the Netherlands, and Germany. The Trebi barley classification represented an attempt to secure a foothold in the extremely valuable market offered by the brewing industries of Great Britain and Belgium.

As yet the new classification has not achieved any success as far as Great Britain and Europe are concerned. Canadian barley of No. 1 quality, during the crop year,

1929-30, fell in price from 78 $\frac{7}{8}$ cents per bushel in store at Fort William on September third of 1929 to 40 $\frac{1}{2}$ cents per bushel on July 31 of 1930. At this price barley was as cheap as oats and appeared to be a drug on the market. One obstacle that Canadian exporters of the higher grades of barley had to contend with during the crop year 1929-30 was the extreme difficulty of handling the grain without the kernels becoming shelled. Under a system of bulk-handling, where the grain is turned over several times before it reaches the ultimate buyer, this is a very serious problem. Shelling lessens the usefulness of high class barley for malting and brewing. It is believed that the exceptionally dry season of 1929 shrunk the kernels after the hulls had grown, thus making the grain peculiarly susceptible to shelling.

IX. THE FUTURE OF THE GRAIN TRADE.

Low prices for wheat and other cereals in the export market have led to a series of conferences and schemes designed to enhance the price received by the producer. Among the suggestions made to produce this end are a forced reduction in world acreage, fixed or stabilized prices, and export quotas. In Canada there has been proposed a national wheat board to market the crop through one agency. The complement to this suggestion is the proposal that the United Kingdom should purchase its supplies through an import board or on a bulk-purchase plan. It is very doubtful whether the further projection of governments into the business of wheat marketing will ultimately benefit the producers, although it must be pointed out that at this time there is a strong trend in this direction, particularly in Europe.

A reduction in acreage is normally effected by a fall in the price of wheat, and there is evidence that the situation

is already beginning to correct itself. Moreover, when a reduction in acreage is produced by low prices, that reduction occurs through the action of the individual producer consulting his own interests, whereas any scheme imposed by a government is almost bound to be ill-adjusted to the position of individual farmers, and it would be difficult to enforce it.

The objections to a guaranteed price established by a central government is, that if the price is fixed at a higher level than is warranted by the supply and demand for wheat, then the crop would necessarily have to be marketed at a price lower than the amount guaranteed. The government thereupon would become involved in losses. The experience of the United States Farm Board and of the prairie provinces in Canada in connection with the Pool indicate how easily a price-fixing policy may lead to heavy losses. On the other hand, if the price set is below the price established by supply and demand, the intervention of the state is unnecessary. It simply would add an unneeded cog to the marketing machinery of the country.

The fixing of a quota by one country in favour of the wheat produced by another may be regarded as a form of preference or of discrimination, depending upon the size of the quota granted in comparison with previous sales or with the quotas granted to competitors. A favourable quota guarantees that a certain quantity will be taken from the country concerned, but it may not assist the producer to realize a higher price for his wheat. Prices may continue to be fixed by the prices in the world markets. With a country like Canada, which exports more wheat than Britain consumes, the chief effect of a quota fixed by the United Kingdom would be to shift the currents of trade. Canada would probably sell more to the United Kingdom and less to the

continent. One genuine advantage would be that it would to some degree ensure that Canada would not lose her British market by the dumping policy of a competitor, but Canada would still have to face such a dumping policy on the continent with its detrimental effects upon price.

The desire shown by a certain number of Canadian grain growers, for a national wheat board to market all Canadian wheat, is largely due to the high price obtained in 1919 under the Canadian Wheat Board. There is a tendency to attribute the high prices of that year to the operations of the Board and not to world conditions of demand. Today the situation after 13 years of peace is vitally different. There are also several general arguments in favour of a central marketing board. It is urged that a centralized agency can control the flow of wheat to market and can also make certain savings in handling charges that could not otherwise be achieved. But unless such an agency is prepared to sell regardless of prices, the flow to market is controlled by buyers' bids. The seller must wait upon the convenience of the buyer. In addition, it must be noted that organizations now engaged in handling and selling grain are large enough to enjoy all the advantages and economies of large scale operations.

Apart from other objections the creation of a national wheat board would be very apt to lead to complementary organizations in buying countries. Wheat is produced in so many parts of the world and there are so many other foods which may be used as a substitute for wheat bread that there is a real danger, in a contest of strength and of wits between opposing boards, that the producer of wheat and the consumer of bread would both suffer. Nevertheless, it must be recognized that the methods employed by other countries in dealing with wheat, as in 1919, might force Canada again, as

an emergency measure, to have recourse to controlled marketing.

The present marketing machinery, including producers' organizations, valuable alike from an educative and competitive standpoint, has developed through many years of experience. On the whole this machinery performs its functions with efficiency and cheapness. Falling prices act as a check upon over-production by reducing acreage, and rising prices tend to bring more land under cultivation. Viewed from the perspective of a term of years, the present system, as a workable proposition, can reasonably claim to approach the idea underlying that much abused concept, "orderly marketing". The theory of price control, with uncontrolled production, has been proved definitely to be a fallacy. Control of world wheat production is not within the ambit of practical economics. The great task of all large exporting countries is to create in the minds of the people of deficit countries complete confidence and trust that ample supplies will be forthcoming regularly at a price as low as is consistent with actual cost of production.

CHAPTER XVIII

THE UNDERLYING CONDITIONS OF PRODUCTION

THE present chapter includes topics that do not necessarily, come within the scope of a study of the Canadian grain trade. But they are included because there appears to be a general idea prevalent among those who do not know western Canada that the grain-growing area consists of a single expanse of treeless, level country, producing grain under almost completely homogeneous conditions. While such a conception would be applicable to parts of all three of the prairie provinces, western Canadians are well aware that the area known as the Canadian prairies includes diversities of configuration, of soil, and of climate, which affect greatly from season to season the conditions under which grain crops are sown and harvested. For this reason it has seemed worth while to incorporate in the present study, a brief sketch of the physical features of western Canada and of the general conditions under which Canadian grain is produced and brought to market.

I. THE WESTERN GRAIN-GROWING AREA.

The interior plains of Canada are the northern part of a region of plains and plateau, which extends from the Gulf of Mexico to the Arctic Ocean. In Canada the region lies between the rough country of the Canadian shield, which borders eastern Manitoba, and the Rocky Mountains. Along the southern boundary of Canada it is 800 miles broad, but northward the breadth decreases until 1,500 miles north and

west the breadth of the region on the Arctic coast is less than 100 miles. The grain-growing area is found mainly within the southern half of the provinces of Manitoba, Saskatchewan and Alberta. There is, in addition, in the northwest sector of Alberta the Peace River District, which includes some millions of acres of land capable of producing grain. The provinces extend northward from the United States boundary approximately 800 miles.

The whole region slopes northward and eastward from elevations of 3,000 to 5,000 feet above sea-level along the edge of the foothills of the Rocky Mountains on the west to 1,200 feet or less along the eastern boundary. The major portion of the area drains northeastward into Hudson Bay. A narrow strip in southern Alberta and Saskatchewan, however, lies within the watershed of the Mississippi river; and the waters of the Peace River district in northern Alberta are carried directly north to the Arctic Ocean.

The southern portion of the three provinces falls into a three-fold division of prairie steppes, which rise one above another from east to west until the Foothills are reached. The eastern division, within the province of Manitoba, is marked on the west by a prominent escarpment, which rises to heights of 400 to 1,000 feet or more above the Manitoba lowland. The escarpment is divided into several prominent hills, known as the Pembina, Riding, Duck, Porcupine and Pasquia Hills. The second range of steppes or plateau extends across most of the southern half of Saskatchewan. South of the city of Moose Jaw a great belt of drift-deposits, known as the Missouri Coteau, marks the rise of altitude which leads to the higher ground of Alberta. Farther north in Saskatchewan the Eagle Hills, indicate the line of division. The province of Alberta, which includes the Foothills, can scarcely be called a plain. In central Alberta, ranges of low

hills, the result of erosion, give the province more pronounced relief than the country farther east.

Except in limited districts, the whole region is diversified by wide and deep river valleys. At points these river valleys are between ten and twenty miles wide. There are also single hills, known as outliers, and numerous shallow lakes. Much of the area presents rolling surfaces with here and there patches of small timber. Level, treeless plains are characteristic only of parts of southern Manitoba and Saskatchewan.

The soil overlies great thicknesses of almost undisturbed sedimentary strata. Two important causes have contributed, however, to create great variety in the nature of the surface covering. In the first place, there occurred the advance of the ice pack in glacial times from the north and northeast. This advance carried material with it and spread it in a mantle of drift almost to the base of the Rockies. In the second place, there were created large lakelike basins during the closing stages of glaciation by the ice front holding back water. The best known of these vanished glacial lakes was that called by geologists "Lake Agassiz", which covered southern Manitoba and drained southward to the Mississippi. Into this lake drainage channels carried a great burden of fine-grained material, which now forms the famous black soil of the Red River valley in Manitoba. At other points also the blockade of rivers by the ice cap produced smaller basins and left areas of rich black soil.

In general, in the west the soils fall into three broad classes. These are, (1) sand and sandy loams; (2) gray, brown and black loams, and (3) silt and heavy clay loams. Within the latter type are found in bottom flats the heavy sticky soil popularly known as "gumbo." Glaciation and erosion by wind and water have, however, produced much

variety. In a recent survey of Manitoba the province has been divided into eight distinct soil areas. In Saskatchewan, where a more minute classification has been attempted, over a dozen types of soil are recognized. In Alberta analysts commonly divide the soil into eight classes. From the standpoint of agriculture the significance of these distinctions is that each district has its own peculiar limitations and possibilities which affect the growth, yield, and date of maturity of the cereals grown. Apart from other limiting factors the soil alone imposes restrictions upon the nature of the crops possible and the amount of product returned to the farmer. In the latter aspect with respect to grain this ultimately translates itself into varying costs of production for different districts.

II. WESTERN CANADIAN CLIMATE.

Western Canada possesses the continental type of climate with wide variations between summer heat and winter cold. On the whole, there is remarkable similarity within the entire region. Northern points show a somewhat greater degree of frigidity in winter, and the south slightly greater heat during the summer. While the temperatures of Alberta show the influence of warm "chinook" winds from the south and west, the variation is not large, as a comparison of normal average temperatures reveals. (Table 1).

Normal Temperatures (F.) at Selected Stations in Western Canada.

(TABLE I.)

Month	Edmonton		Medicine Hat		Prince Albert		Qu'Appelle		Winnipeg	
	Mean Daily Max.	Mean Daily Min.	Mean Daily Max.	Mean Daily Min.	Mean Daily Max.	Mean Daily Min.	Mean Daily Max.	Mean Daily Min.	Mean Daily Max.	Mean Daily Min.
Jan.	15.9	-3.3	22.3	1.7	6.1	-15.2	9.6	-8.8	7.1	-12.3
Feb.	21.8	0.8	24.9	3.7	12.8	-11.4	13.0	-5.4	11.5	-10.0
Mar.	34.5	11.9	38.8	16.0	26.8	1.7	26.3	7.0	27.3	5.0
April	52.7	28.6	58.6	31.8	49.0	24.2	49.1	25.5	49.8	27.6
May	64.3	32.9	68.6	41.8	63.1	36.1	62.8	37.6	64.8	38.8
June	70.0	44.4	76.4	49.9	71.0	45.6	70.9	48.0	74.9	50.2
July	74.1	48.9	83.7	54.8	75.0	50.5	76.4	51.6	78.5	54.7
Aug.	71.1	46.6	81.2	52.1	72.4	44.9	74.1	48.9	75.0	51.0
Sept.	62.2	37.8	70.1	42.9	62.2	37.8	64.2	39.9	66.0	42.8
Oct.	52.6	29.8	58.5	33.1	49.1	27.8	51.0	29.9	52.0	31.7
Nov.	33.7	15.9	40.6	22.6	28.4	10.8	31.0	14.1	31.3	14.7
Dec.	23.3	6.0	29.9	12.2	14.7	-4.3	17.8	1.8	16.0	-2.0

In Alberta the isotherms in summer run north and south. Hence the Peace River district enjoys the same favourable climate for vegetation that prevails elsewhere. In addition, on account of its more northerly position the long hours of sunlight hasten growth and compensate for a somewhat shorter season. The Canadian Meteorological Service has made daily observations and has kept records of western weather since 1885. Data are here taken from selected points which may be regarded as broadly representative for the whole region. The monthly averages of maximum and minimum temperature are the averages of the high points and of the low points for each day of twenty-four hours throughout the month.

An inspection of the foregoing array of average tempera-

tures does not, however, bring out clearly the characteristic features of western weather. The winter is usually marked by a period of from ten days to two weeks of very severe temperatures. This very cold period may come as early as November, but it usually occurs between the middle of December and the middle of February. Thus, at Winnipeg, the record of the lowest temperatures reached for each month since 1885 shows for October of 1887, -3° ; for November, 1891, -33° ; for December, 1910, -42° ; for January, 1894, -46° ; for February, 1893, -48° ; for March, 1887, -37° , and for April, 1899, -13° . In February, 1893, -70.4° was registered at Prince Albert. Conversely, during the summer there is usually at least one heat wave which endures possibly for a week when the temperature rises to a very high degree. Extreme heat usually occurs in June or July, but temperatures exceeding 90° have been registered as early as May and even in April, and as late as October. In August, 1886, 103° was recorded in Winnipeg and 104° farther west. In July, 1914, the high record for the south central district was 107° and in August of the same year 105° . In June, 1919, the maximum temperature at Dauphin, Manitoba, was 110° .

Throughout the summer, with rare exceptions, the nights are relatively cool, and this fact has an important influence in filling out and giving weight and quality to the grain. The critical weather periods in western Canada are April and early May, when seeding may be delayed by a late or wet spring, the end of May and beginning of June, when the seasonal rains are needed, and the first two weeks of August, when damage may be done to grain not fully matured, by an early frost or by rust conditions. Bad weather, of course, in the harvesting period may delay threshing or injure the grade of the grain. Since 1900 there have been at least three crops, those of 1907, 1924 and 1928, that have

suffered severe losses from early frosts, and at least two from rust.

All over the west a limiting factor in the growth of crops is the amount and timeliness of the rainfall. At most, the annual precipitation, as compared with other parts of Canada, is low, and in this respect the provinces of Alberta and Saskatchewan suffer to a greater extent than Manitoba, where the weather is influenced by Hudson Bay and the lake systems to the north and east. The more western provinces are also subject to greater variations from year to year. The average annual precipitation at Edmonton since 1885 amounts to 17.64 inches, at Medicine Hat to 12.69 inches, at Prince Albert to 15.88 inches, at Qu'Appelle to 19.33, and at Winnipeg to 20.02 inches. This may be compared with 58.65 inches at Vancouver, 33.46 inches at Toronto, and 41.16 inches at Montreal.

The lowest precipitation at these selected stations is that reported from Medicine Hat. That station lies within a dry belt, which extends across southern Alberta from the southwest corner northeasterly in the general direction of Saskatoon in Saskatchewan. This is the area that has suffered loss from drought on repeated occasions. Within this area in Alberta there have been developed a number of important irrigation projects, which make irrigation available for over 3,500,000 acres.

Of the total amount of precipitation that attributable to snow amounts to approximately one-quarter of the whole. On account of the chinook winds large areas in southern Alberta are frequently bare of snow, and, in general, while the ground is covered, deep snows are not a characteristic of the western winter. The average rainfall at Edmonton amounts to 13.08 inches, at Medicine Hat to 9.15 inches, at Qu'Appelle to 13.52 inches, at Prince Albert to 11.27 inches,

and at Winnipeg to 15.03 inches. From 65% to 80% of this rainfall occurs during the growing months of May, June, July, and August, and comes in heavy showers rather than in periods of continuous rain. The conjunction of a large measure of sunshine with adequate moisture gives western vegetation a remarkably rapid rate of growth. Wide variation in the amount of precipitation may occur from year to year, and the knowledge of this possibility creates a situation of tension in the west until the summer rains assure the crop. At Winnipeg the greatest amount of precipitation on record for one year was that of 29.20 inches in 1878, and the least, 14.38 inches in 1886. In the latter year only 4.23 inches fell during the period between May and August. During the growing season hail storms occur and are greatly feared in those districts where they are comparatively frequent. A severe hail storm will totally destroy a crop in a few minutes and cause a disastrous change in the prospects of the unfortunate owner. In recent years insurance against destruction by hail has developed, and this divides the burden of the loss. In 1928, 45 insurance companies undertook this class of risk. The premiums written amounted to \$6,919,252, and the losses incurred to \$6,954,298. There are great fluctuations from year to year in the losses from hail.

Although the province of Alberta claims the sobriquet of "Sunny Alberta", all three provinces share the beneficial influences of long hours of bright sunny weather. Recent figures show that the average of sunshine for the year at Edmonton is 2,145 hours, with an average of only 54 days completely clouded over. Of the latter, 28 days fall within November, December, and January. At Medicine Hat the average number of hours of sunlight per year is 2,303, with 47 days completely clouded over. With slight variations similar returns tell the same story for the province of Sas-

katchewan. Manitoba has about the same number of hours of sunlight, but there are more days of completely clouded sky.

With the exception of southern Alberta, where the winds are from the southwest, the prevailing winds are northwest. These increase in strength as they traverse the plains and are more prevalent in the south than in the north. At Calgary the average velocity is 7.3 miles per hour for the year. This becomes 9.0 miles per hour at Qu'Appelle and 12.2 miles at Winnipeg. The average velocity at Edmonton is only 5.3 miles per hour, and at Prince Albert the records show an even lower average of 3.8 miles per hour for the year. To compare the west in this respect with eastern Canada, the records show that at Toronto the average annual velocity of the wind is 10.9 per hour.

In one important particular there is a difference between the east and the west. In western Canada the winds are least severe during winter and the stillness of the air tends to mitigate low temperatures. On the other hand, western winds are most prevalent during the sowing season in the spring, and this has created in certain districts where the soil is fine in texture a problem in soil drifting. The soil dries out rapidly and the wind shifts the soil with disastrous results to the crop sown. When soil drifting obtains a start in a district, it becomes a real menace and, where it is possible, active steps have been taken to combat it.

Sufficient stress has now been laid upon the variety of natural conditions which influence agriculture in western Canada. When the first settlers entered the west, they found in Manitoba wide stretches of flat fertile country, covered with deep grasses, peas, vetches, and prairie flowers. This is the true prairie. As they penetrated to the southwest, the vegetation thinned out and shortened on account of the

absence of plentiful supplies of moisture. Northward they found the flat bottomlands of glacial lake basins give place to rolling, undulating terrain, with here and there small lakes and clumps of aspens or other light woods. This is known as the park land country, and much of it is of great beauty though the soil may prove to be light. At points in the Peace River District, the scenery suggests parts of England. In the north the land carries some stands of timber, which in turn gives way to the scarcely touched swamps and barrens of the sub-Arctic regions.

III. LAND ORGANIZATION.

With the transfer of the Northwest Territories and the establishment of the province of Manitoba, steps were taken to bring the land under a system of survey. The plan eventually adopted provided for townships approximately six miles square. These townships were numbered, the points of reference east and west being meridians of longitude, and north and south the international boundary, which rests upon the forty-ninth parallel of latitude. Every township was subdivided into 36 sections, each section one square mile, more or less. All townships were subject to the convergence and divergence of meridians, together with road allowances 66 feet wide on each section line north and south and on every alternate section line east and west. According to the first plan of survey, road allowances were 99 feet wide and gave a road on every section line. Part of Manitoba and a few townships in Saskatchewan were laid out according to this plan. Each section of land was divided into four quarter-sections of 160 acres,—the initial farm unit in western Canada.

As a result of this system the whole country has been mapped out as a vast grid, marked by roads east and west,

and north and south, which intersect at right angles. Such a system undoubtedly possesses great advantages as a uniform and orderly division of farm lands. In respect to roads it is scarcely as successful, since it fails to take into account the configuration of the land. On the flat prairie this is not a serious objection, but in rolling country the undeviating road allowance frequently traverses small bogs or sloughs and fails to take advantage of easy gradients. Roads from the country into distributing points do not converge upon these centres but provide a route along two sides of a rectangle. In many instances the absence of diagonal roads combined with road allowances through land unsuitable for such a purpose increases the cost of haulage for farm commodities.

The Federal Government adopted the policy of offering free homesteads to encourage settlement. Under this policy a settler could obtain title in three years to a quarter-section on fulfilling simple conditions of cultivation and residence. Over one-half of the farm lands occupied in the west have been settled in this way. On January first, 1930, the area under homestead amounted to 59,777,460 acres. Although the supply of land was declining, homestead entries continued to be made each year. In 1929 net homestead entries numbered 9,525. By legislation passed in 1930, however, Dominion lands situated in the prairie provinces, with the exception of Indian reserves and national parks, were transferred to the provinces and new regulations are being put into force.

Apart from free land secured under homestead regulations, there has always been since the opening of the country much land available for purchase. The Federal Government's disposition of surveyed lands included the reservation of two sections in every township for sale for school endowment purposes, as well as grants to railway companies as

subsidies for railway construction. Railway grants amounted to 31,786,610 acres and the Hudson Bay's Company received 7,031,257 acres. The area granted as school land endowment amounted to 9,353,250 acres. From these lands and various other miscellaneous grants, sales were constantly being made to new settlers. The total sales by the railway companies alone since 1893 up to the end of the fiscal year, 1929, amounted to 28,499,356 acres.

As compared with European standards, and even with eastern Canada, the average individual farm holding in western Canada is large. The influence of the granting of free homesteads of 160 acres is apparent in the large number of holdings reported by the census of 1921 as containing from 101 to 200 acres. Out of 255,667 occupied farms in the three provinces, 95,033 fall within this class. There are 7,802 occupied farms with an area of between 201 acres and 299 acres. The small number of holdings within this group is undoubtedly due to the fact that farms of a half section, 320 acres, come within the next class. There are 140,781 farms containing 300 acres and over, or 55 per cent of all the occupied farms in the west fall within this category. The predominance of the relatively large holdings is brought out more clearly by examining the total acreage in each class. Out of an area of 87,931,804 acres of occupied farms in Manitoba, Saskatchewan, and Alberta, 70,290,698 acres or 79 per cent of the total area is found in holdings exceeding 300 acres. Farms of between 101 and 200 acres are next in importance, but they account for only 15,184,810 acres, or 17 per cent of the total. Over 99 per cent of all occupied farms in western Canada exceed 100 acres in extent.

As might be expected from the conditions of settlement, western farms are occupied and farmed mainly by their owners. Owner-occupiers represent 77 per cent of the total

number of farms and 78 per cent of the acreage. Of the rest, 10 per cent of the farms, representing 17 per cent of the acreage, are rented by tenants. Finally, 2,291 holdings are recorded as under managers. The total area involved here amounts to 2,259,088 acres. While large farm holdings, managed by an entrepreneur or contractor, and operated as an investment, are not unknown in western Canada, there has been no considerable development of this character. Nevertheless, it is not unlikely that the increased mechanization of grain growing and the influence of the large "food factories" of Russia may lead to further experiments in this direction.

IV. POPULATION.

The rural population of western Canada in 1926 numbered 1,313,681 and comprised 63 per cent of the total. The basic stock, of British racial origin, is composed of settlers from the older provinces, especially Ontario, from the British Isles and Ireland direct, or from the United States. In Manitoba, northern Saskatchewan, and northern Alberta there were very early settlements of French-Canadians, but this group is not very large. In 1921 the population of French origin in the west amounted to 113,703. In that year the percentage of foreign-born population in Manitoba was 18 per cent, in Saskatchewan, 26 per cent, and in Alberta, 29 per cent. Important racial groups are the Germans, 122,979, Scandinavians, 131,272, and the Russians, Ukrainians and Austrians, 271,184. A very large proportion of these peoples are settled upon the land.

While the west generally exhibits an intermixture of peoples, important concentrations of a single racial type occur in various parts of the country, particularly in the north. In certain sections this concentration is very marked.

In the federal constituency of Dauphin in Manitoba, with a total population of 35,482, according to the census of 1921, the Ukrainian element numbered 10,361. The adjoining constituency of Mackenzie in northeast Saskatchewan, with a population of 55,629, contained 11,504 Ukrainians, 10,363 Austrians, 7,580 Russians, approximately four thousand Scandinavians, and about two thousand Germans. In Alberta, the old federal constituency of Victoria (Vegreville), with a population of 56,739, had 13,165 Ukrainians, 8,437 Scandinavians, 4,803 Austrians, and 4,289 Germans. In other parts of the west similar groupings will be found, though not on such a large scale.

Nevertheless, with the exception of a few scattered districts, settled by religious communities, the general organization of agriculture is almost uniform throughout the west. Almost everywhere individual farming prevails. The farmers do not live in small villages, but occupy their separate holdings. There is no outstanding difference in the mode of cultivation. A stranger passing through the country would not detect by the general external appearance of the farms, where an area was settled by people of foreign birth. Naturally, in the richer and longer-settled communities the land has been more completely brought under cultivation and the farm buildings are of a superior quality. But everywhere, as the settler develops his land, straw-covered stables and shacks give way to better and more commodious types of accommodation. The automobile and the rural telephone come into use, and the country-school makes its appearance.

V. FARM MANAGEMENT.

The essential similarity of farming methods in the grain-growing areas of western Canada make especially valuable recent studies by Professor William Allen, of the University

of Saskatchewan.¹ In 1926 Dr. Allen made a survey of 119 farms in the grain-growing district of Belbeck, just north of the city of Moose Jaw. This area was chosen as representative of a large number of farms on the heavy clay lands of the Regina plain. It is an old well-established district. The farm operators are mostly from British stock. Settlement began under homesteading conditions as far back as 1887. As homestead land became occupied, other land was available for purchase. The size of the farms is about 30 per cent larger than the average Saskatchewan farm. The average acreage per farming unit is 487 acres, and 448 acres of this were under cultivation. These substantial farms naturally require more work, animals, and equipment, than smaller units, and on account of the relatively long period of settlement the land is more fully utilized than lands settled at a later date. Nevertheless, the survey gives a good picture of the general methods of grain-farming in western Canada.

Occupied-ownership in this district is the rule. Of 113 operators, 95 were owners and 16 were tenants. The average number of members of the family resident upon the farm was four. Many of the farms require hired help throughout the year, and almost all employed outside assistance during the period of harvest. Forty per cent of the farmers hired at least one man for the full year. In 1925, 53 per cent hired monthly labour for an average period of 6.8 months. The average monthly wage was \$51 per month, together with board and lodging. In August, September, and October, when additional harvest help was required, wage rates ranged from \$3.50 to \$4.50 per day.

The total area of the 119 farms under survey was 57,992 acres. Of this area 53,170 acres, or 91 per cent, were culti-

¹Allen, *The Farm Business in Saskatchewan*. Studies Nos. 1 and 2, University of Saskatchewan.

vated. Land in pasture amounted to 3,543 acres, and land in farmsteads, roads, and waste, accounted for 1,152 acres. The typical pasture was from 15 to 25 acres. The common size of the farmstead was from 5 to 10 acres. Forty-six per cent of all the land was devoted to wheat, thirteen per cent to oats, and four per cent to barley. The area in summer fallow amounted to 35 per cent of the total.

The live stock of the average farm operator was little more than that required for actual farm needs. The work horses were the important farm animals, and they represented in value 75 per cent of the average value of all the live stock. The average number of horses per farm was 13.6. These animals were usually grade stock of Clydesdale or Percheron type. A few farms had fairly large herds of cattle, but the average number per farm was 8.9. Four cows was the usual number. About half of the farmers kept swine. Sheep were kept by three operators only. Most farmers kept a flock of poultry, numbering from 50 to 75.

The farms were well-equipped with machinery. The equipment on one of the larger farms would include two plows, two drills, two disk-harrows, six sections of drag-harrows, occasionally a soil-packer, and two cultivators. The variety and number of implements show the importance attached to the preparation and seeding of the soil. Harvesting implements would include two binders, and a mower, and a tractor might be employed. Haulage would be represented by four wagon gears, or possibly fewer wagons and a truck. The district was well supplied with threshing outfits. Forty-seven separators were reported. In addition, many farms were equipped with small gas engines and choppers and grinders. Every farm had its automobile. The total value of all the farm equipment was estimated at \$353,460, or \$2,970 per farm.

For most agricultural operations the implements and machinery were horse-drawn. On no farm was all the field work performed by gasoline traction power. The standard working outfit was the six-horse unit. Over two-thirds of all outfits used for plowing, cultivating, disk-harrowing, and drag-harrowing, were of this size. For seeding, 45 per cent of all outfits were six-horse units. The four-horse unit was general for cutting grain and also constituted 55 per cent of the seeding outfits. Professor Allen states that the six-horse unit for seeding is increasing in popularity and will probably exceed the four-horse unit in future.

The crop system was the typical western three-year rotation: summer fallow; wheat; and wheat, oats or barley. The claims made for this rotation is that it provides a certain measure of weed control, and moisture conservation, it is extremely simple, and it has a high percentage of the principal cash crop. Wheat grown on land under summer fallow the previous year averaged 7 bushels per acre more than wheat grown on other land. Oats were grown chiefly for feed, as hay is very scarce in the Belbeck district. The early ripening of barley aids in the control of wild oats and also helps in the distribution of labour throughout the summer. One-third of all crop land was in summer fallow annually. In early years the plowing of land was considered to be an essential part of summer fallowing, but the general practice of allowing the cultivator to take the place of the plow on alternate summer fallows has developed in the Belbeck district.

The real estate in this community had steadily increased in value since the opening of the district to settlement. The average value of farm lands, including buildings, was estimated in 1926 at approximately \$60 per acre. For the 103 owner-operated farms included in the survey the average

capital invested per farm was placed at \$35,261. Of this total the value of real estate accounted for \$28,928, the value of live stock for \$2,180, and the value of equipment for \$3,153. Professor Allen has calculated that in 1925 these farms on the average returned a labour income to the owner of \$2,104, and, with interest calculated at 6 per cent on investment, a total income of \$4,465. Forty-three owners reported no debt. Fifty-three reported indebtedness which averaged 28 per cent of their farm capital. Naturally, the farms that had been owned for the shortest period showed the highest percentage of debt. On the whole, however, it will be seen that in 1926 these farmers were in a fortunate financial position. This study, the work of a very competent investigator, though it does not depict current conditions, is included here since it may be regarded as broadly typical of the conditions prevailing in many farming districts between the depression of 1920-21 and the present period of hard times. A survey of the same area at the present time would probably show that there had been a great increase in the mechanization of farms with larger areas thereby made available for crop, and, with the era of low prices, a considerable fall in land values.

VI. COST OF PRODUCTION.

There has not been time since the arrival of depression and low prices to make intensive studies of the cost of production of wheat or other cereals in western Canada. There may, however, be some advantage in making a survey of materials available in connection with the preceding period, and in endeavouring to estimate the change that has been brought about by recent conditions. The relatively stable figure for the cost of the production of grain in western Canada is the cost of production per acre. The cost of pro-

ducing a bushel of grain fluctuates with the yield per acre, whereas the working costs per acre do not vary materially with yield, except for harvesting and threshing. Professor Allen calculates that the average cost of production per acre on Belbeck farms in 1925 amounted to \$25.95. The average cost per bushel was \$1.002 and the yield per acre was 27.4 bushels, being 8.9 bushels in excess of the average yield per acre for the province of Saskatchewan as a whole. A similar survey made for the district of Melfort in northern Saskatchewan placed the cost per acre at \$23.56.

The high cost of production of wheat per acre shown for Belbeck district appears to have been due in part to the high valuation placed upon real estate. The average value of the land and buildings was placed at approximately \$60 per acre, as compared with the average value for the whole province of \$29. Interest on investment appears in the computation as one of the non-cash costs of production. Thus a high land valuation means a high cost of production. In the circumstances the farmer might still make a substantial income with wheat selling at a lower price than the average received for the district in 1925, namely, \$1.27 per bushel. In Belbeck, despite this high value placed upon land in 1928, with a high yield the profits amounted to \$6.92 per acre.

These results may be compared with the estimate of cost of production made by the Dominion Bureau of Statistics for the year 1924. The estimate covers each of the provinces and is also worked out for the prairie provinces as a unit. The Bureau figures were computed on the basis of schedules prepared by it and issued to its regular crop correspondents in the west. The number of effective returns for the inquiry was 1,639. The results are as follows:

AVERAGE COST OF GRAIN PRODUCTION PER ACRE IN THE
PRAIRIE PROVINCES, 1924.

SPRING WHEAT

	After Stubble	After Summer	Fallow	Oats	Rye	Barley	Flax
Preparation	\$2.45	\$3.72	\$2.46	\$2.50	\$2.48	\$2.59	
Seed	1.48	1.57	1.05	1.17	1.12	1.37	
Seeding and Cul- tivation	1.00	1.09	1.07	0.99	0.99	1.02	
Harvesting	1.47	1.61	1.49	1.54	1.49	1.24	
Threshing	1.66	2.11	2.10	1.85	1.85	2.26	
Cleaning and Hauling	0.91	1.16	1.14	0.97	1.10	0.97	
Wear and Tear of Implements	0.50	0.54	0.49	0.49	0.51	0.53	
Hail Insurance....	0.40	0.43	0.41	0.38	0.36	0.45	
Rental Value	2.73	3.50	2.64	2.75	2.71	2.91	
Totals	\$12.60	\$15.73	\$12.85	\$12.64	\$12.64	\$13.14	

For Manitoba the average cost of production for spring wheat in 1924 was estimated at \$13.74 per acre, for Saskatchewan, \$12.29 per acre, and for Alberta \$12.82 per acre. The Bureau estimates of cost of production are thus lower than that found by Dr. Allen.

In turn, we may compare these estimates with those made by the United States Tariff Commission. In the winter of 1924 this body conducted an investigation into the cost of producing Canadian wheat. Its aim was to obtain information for the purpose of adjusting the American protective tariff in such a way that an additional import duty would equalize the difference in cost between American and Canadian wheat production, when Canadian wheat was exported to the United States. The field force of the Commission visited

43 points in the Canadian northwest and obtained 951 cost records, covering 802,672 acres of land. The Commission reported that the average cost of wheat production in western Canada was approximately \$17.29 per acre. Individual points varied from \$23.90 per acre at Edmonton, Alberta, to \$12.03 per acre at Maple Creek, Saskatchewan.

Still another investigation was that conducted by Professor H. C. Grant of Manitoba Agricultural College. Mr. Grant placed the cost per acre in the Portage district, one of the oldest and best districts in Manitoba, at \$23.96 per acre; at Deloraine at \$19.38 per acre, and at Waskada at \$16.56 per acre.² From a survey of these figures, compiled in each instance after a direct investigation of production costs, it will be observed that the range of estimated costs per acre of producing wheat varies from slightly under \$13.00 per acre to about \$24.00.

The wide discrepancy between the upper and the lower figures naturally raises the problem of their significance. The variations are partly due to a difference in the methods of computation and partly due to a difference in the value of land in widely separated parts of the west. The element of time also enters into the situation. Costs calculated in money are directly influenced of course by the general price level. This is especially true in the case of early post-war studies, such as Mr. Grant's. The procedure followed by the Dominion Bureau of Statistics, it will be observed, has been to assign costs to the general operations and other factors for the acres growing the various crops. The total shows the average cost of production. Thus the cost per acre of growing wheat is approximately the same as that of growing other grains. In the areas chosen for investigation by Dr. Allen the business of farming is essentially that of

² Grant, H. C., *Special Committee of the House of Commons on Agricultural Conditions, 1923*, King's Printer, Ottawa, p. 367.

wheat production, over 90 per cent of the cash receipts coming directly from wheat sold. The receipts other than from wheat sold came as a small supplementary income only. In the circumstances the cost of producing wheat is treated as the total net cost of operating all cultivated land. Hence the proportion of land found necessary to be devoted to summer fallow and feed crops has an important bearing upon the cost of wheat per acre. The justification of this method of computation is that in these districts oats are produced primarily for feeding the work stock, and other animals, barley for feed, for clearing the land, for labour distribution, and only incidentally for sale. The time of doing the work on these crops is always a consideration secondary to the important major enterprise. What is significant to the farmer is the profits on wheat production. Thus, by treating the production of oats and barley as necessary but purely subsidiary to wheat production, a higher cost per acre is shown for the latter than would be the case if costs were generalized for each and losses on the production of feed crops calculated and higher profits imputed to wheat. Mr. Grant made use of a similar method. While the gross returns to the farmer would be the same under any method, a discrepancy naturally occurs when the theoretical determination of the cost of wheat production per acre is attempted. It will be noted that the method followed by Dr. Allen is applicable only where wheat production is the major enterprise on the farm.

Both Mr. Allen's study and Mr. Grant's were made by detailed investigations on the farm. The Bureau of Statistics figures were compiled by questionnaire and despite the theory of large numbers are hardly comparable to the results of detailed study. The detailed surveys were made to investigate the business organization of the farm and only

incidentally do cost figures emerge. On the other hand, the areas studied are really too small to give a representative cost figure, and too wide an inference must not be drawn from them.

Another cause of discrepancy is due to the differences in the value of the land. Land of high value naturally has a greater amount of overhead charged against it per acre in computing costs of production. Theoretically land charges should be excluded. The value of the land should ultimately rest upon the net income yield derived from it. But on the other hand, where included, high land values are usually an indication of fertility, convenience to shipping points, and regularity of crop yield. High land values and high cost per acre of wheat production, therefore, do not necessarily mean high cost per bushel, since the latter brings yield into the reckoning.

Variations in yield mean marked fluctuations in the cost of production per bushel. With an average yield of wheat in 1925 at Melfort of 31.9 bushels per acre, the cost of production per bushel was estimated to be approximately 78 cents, whereas at Belbeck, with 27.4 bushels to the acre, the cost was placed at \$1.002. Mr. Grant estimated the cost per bushel in Manitoba to be \$1.28 in the Portage district and to be 92 cents at Waskada. The latter figure agrees with the average cost per bushel found by the American investigators, based on costs and yields for the three-year period of 1921-23 inclusive. Their estimate was approximately 92 cents per bushel. But thirty per cent of the districts they investigated exhibited average costs per bushel for the three-year period of over one dollar, another thirty per cent showed costs below 80 cents per bushel, while in the remaining forty per cent costs fell between 80 cents and one dollar. Variations in the richness of the soil, in the

timeliness and abundance of rainfall, and in the length of the season affecting yield, also lie behind the wide discrepancy in figures reached for the cost per bushel of producing wheat in different districts.

It will be apparent at once that on account of the variety of conditions which influence cost of production, that even during the period of high prices some land in western Canada was actually marginal or sub-marginal land, yielding no profit or losses upon a given year's operations. Sometimes on the average a whole province may prove to be sub-marginal. The variations in yield from year to year show this to be possible. Between 1915 and 1928 inclusive the fluctuations in yield of spring wheat in Manitoba ranged from 24.7 bushels in 1915 to 11.0 bushels the following year. In Saskatchewan the lowest yield reported was 8.5 bushels per acre in 1919 with 25.0 bushels in 1915. In Alberta the average yield in 1918 was 6.0 bushels per acre, as compared with 31.0 bushels in 1915, 28 in 1923 and 27.4 in 1928. The five-year average yield per acre between 1924-28 for Manitoba was 18.2; for Saskatchewan, 17.6, and for Alberta 20.5.

Average Yield Per Acre of Spring Wheat.

	Man.	Sask.	Alta.
1915	24.7	25.0	31.0
1916	11.0	16.2	25.0
1917	16.7	14.2	18.2
1918	16.3	10.0	6.0
1919	14.2	8.5	8.0
1920	13.9	11.2	20.5
1921	11.1	13.7	10.2
1922	19.2	20.2	11.2
1923	11.3	21.3	28.0
1924	16.9	10.2	11.0
1925	17.8	18.8	18.0
1926	22.6	16.2	18.5
1927	14.0	16.4	27.4
1928	19.6	23.2	25.4

Another aspect of the cost problem that must be noted is that in certain districts in the west wheat growing is marginal, in the sense that the land is capable of being employed with nearly equal profit for dairy farming or stock raising. Where these conditions prevail a relatively slight decline in the price of wheat or rise in that of dairy or of live stock products, persisting for a few years, will induce a shift to these forms of agriculture. On the whole, the data submitted here give little support to the view that even under conditions of relatively high prices there can be an indefinitely large expansion of the wheat-growing area in western Canada either by recourse to lands of poorer quality or to districts where the conditions of production, because of the climate, become more hazardous. Any large future net increase promises to be chiefly from the utilization of lands within districts now partially settled.

But at the present time light yields for the years 1929 and 1931 have combined with the catastrophic fall in prices to place the farmers of western Canada in a situation of extreme difficulty. The very lowest estimate of cost per bushel, based on recent investigations, still leaves a wide margin of loss to be absorbed by the producer. This is reflected in the general stagnation in business produced by the inability of the farmers to meet claims against them. On the other hand, there is no doubt that the crop sown in the spring of 1931 was put into the ground at a cost considerably lower than for many years. Wherever possible, hired help was avoided and farmers have used horses in preference to tractors in order to avoid buying gasoline. While reducing acreage by eight per cent, grain growers of western Canada made a grim and dogged effort to put in the crop of 1931 on such a basis that with an average yield returns would cover operating costs. Unfortunately, lack of precipitation during the early summer resulted in a

severe crop failure over a large area, and in these areas the western grain grower continues to face most trying conditions.

VII. MECHANIZATION.

Just before the fall in prices, grain farming in western Canada was undergoing a noticeable change in methods. For several years there was a very rapid increase in the utilization of power machinery, particularly of the combined harvester-thresher. Along with this the tractor and the truck were being used to replace the work horse. The whole evolution, still in its infancy, has suffered a setback due to the depression, and how far it will ultimately proceed is a matter of debate among technical experts. Apart from its influence upon the cost of the production of grain, it raises a series of problems connected with farm management and with the settlement of western Canada that call for careful examination.

At the basis of this evolution has been an unsatisfactory situation with respect to harvest labour. As far back as 1902 the requirements of men for the western harvest was placed at 25,000. In 1927 it was estimated that 27,000 men would have to be brought into western Canada from the east to supplement the local harvest labour available. In addition, it was calculated that there would be needed 6,000 men for the harvest in British Columbia. While the increased use of machinery had enabled an immensely larger crop to be harvested in 1927 than twenty-five years earlier without greatly increasing the demand for labour, yet every year a larger or smaller number of transient labourers had to be imported to handle the crop. In 1926 and in 1927 there were serious shortages. For instance, the total number of harvesters who actually came to Alberta in 1927 from all

sources was 8,851, against estimated requirements of 10,000 men. Of these 4,903 were from the east, 2,948 from British Columbia, and 1,000 from the United States. The shortage in Alberta was only relieved after harvesting operations in Saskatchewan had been completed. In 1926 only the most strenuous efforts were successful in securing sufficient labour to save the western crop. In that year the railways decided to run four extra excursions from the east and the Federal Immigration authorities conducted an extensive campaign to secure men from the United States. In 1926 and 1927 it was found increasingly difficult to secure as large a number of men from the east as formerly. In 1928 the experiment was tried of importing 8,000 unemployed miners from Great Britain.

The shortness of the season makes the period one of intense activity. Men are wanted everywhere to harvest the grain as it ripens and afterwards to thresh it before the winter season sets in. Moreover, despite the careful organization, on account of variations in the ripening period the adjustment of labour supplies to demand is not complete. Naturally, many men came on these excursions who were practically untrained, but such were the exigencies of demand that they obtained high wages. Thus the labour cost of harvesting and threshing was higher than it would have been if trained labour had been available. Yet if high wages were not offered and obtained, labour would not be attracted, for the shortness of the season would not warrant the making of the long trip westward to the harvest fields. When the crop is threshed and harvested the demand for farm labour falls to a low ebb. There is nothing to offer to the labourer to keep him in the west during the winter. Indeed, western cities have had the experience for many years of having to assist a number of stranded farm labourers who, for one

reason or another, found themselves penniless in the west at the beginning of winter. The harvest help problem has been a recurring bugbear to the western grain grower and to western cities as well.

The coming to the farm of a number of transient farm labourers also produced a problem in the average farm home. Domestic help is difficult to obtain on the western farm, and the problem becomes acute when men are hired for the harvest. These men must be fed and provided with sleeping accommodation. Many farm girls who are in domestic services in the cities return to the country to help their parents during the harvesting period, but this by no means satisfies the demand. In general, a heavy burden falls upon the women of the farm in the autumn months. Hence on all counts the possibility of utilizing machinery that will relieve the strain of this situation is welcomed by the farmer.

The combined harvester and thresher first made its appearance in California and then gradually worked up into Oregon. About fifteen years ago it was introduced into Montana and Nebraska. This was a large machine, which cut a swath as wide as forty feet, and because of size and weight it was deemed to be unsuitable to the requirements of the grain grower on the great plains. In 1918 small combines, using an auxiliary engine and pulled by horses or by tractors, were manufactured. The 1920 depression delayed their use, but since 1922 the number purchased in the United States has increased rapidly. In 1910 a 20-foot combine was imported from California and employed at Welby, Saskatchewan, where it was in use for three seasons and harvested 600 acres each season. Generally, the grain from it graded "Tough". In 1913 the machine was used on 600 acres of flax. The following year the farm property changed ownership and the combine was not used by the

new owners. In 1912 the first combine was tried in Alberta, but the grain cut and threshed by it was not fully ripened and spoiled in the bin. The implement company took back the machine and for several years it was believed that the combine was unfitted for the Canadian prairie. In 1922 the Dominion Experimental Farm at Swift Current began a series of experiments with the combine. Finally, the introduction of a swather whereby, when necessary, the grain might be cut and laid in an even swath on the stubble to cure and be later gathered up and threshed, proved an important technical adaptation to northern conditions. The latest auxiliary to the combine is the header-barge which forms small stacks.

In 1926 there were 193 combines in the prairie provinces. In 1927 the number had grown to 791. In 1928 heavy sales of combines throughout the west were reported. In Alberta it was estimated that at least 700 were used south of Calgary, and they were also employed quite extensively in central and southern Saskatchewan. To a less extent they were used in the north of both provinces. The total number in use in 1928 was estimated at nearly 5,000. Sales of these machines were reported for 1929 to number 3,500. It is now recognized that they have been definitely adopted in parts of the Canadian west. The problems they raise are, to what degree they will replace the binder and stationary thresher, the effect of their adoption upon the general methods of grain production, and their effect upon the grain trade.

It is clear that the use of the combine largely solves the farmer's harvest labour problem. The ordinary statement of the amount of labour-saving by combining is that three men do the work of eighteen or twenty. The combine requires one or two men to operate it with an additional man or two to look after the threshed grain. It eliminates the

labour required for stooking after the binder and the crew necessary for stationary threshing. A typical record of performance may be cited: In 1928 a farmer at Elrose, Saskatchewan, was reported to have handled 35,000 bushels in practically forty days, with two men on the combine and two men hauling with power trucks. In 1927 this man had two engines running with ten-foot cut binders, a man to each; five men stooking; and for threshing, six teams each with a man, and two field pitchers, he himself supervising both operations, and he was threshing 28 days in November. With the combines the quick-hauling trucks had the grain in the elevator within twenty minutes from the time it was cut. Investigators for the U.S. Department of Agriculture have calculated that the average amount of labour with a combine is 0.75 man hours per acre as compared with 3.6 man hours usually furnished by the farmer for handling and threshing where the grain is cut with a binder. Thus, in so far as it eliminates the autumn labour problem in the Canadian west, the advent of the combine is wholly desirable.

To secure the maximum benefits from the use of a combine the size of the machine must be adjusted to the amount of work to be done. The rate of cutting depends upon the rate of travel and upon the width of the cut, and the seasonal capacity is dependent upon the rate of cutting and the length of the harvest season. Acres cut per hour range from 1.6 for the 8-foot machines to 4.5 for the 20-foot machines, or, to put it another way, in the United States the average cut per season ranges from 275 acres for 8-foot machines to 1,077 acres for 20-foot machines. The average cut for 16-foot machines is placed at 682 acres.

In the province of Saskatchewan the average cost of a 15- or 16-foot combine in 1928 was estimated to be \$2,300. A farmer on a 640-acre farm will usually cut 400 acres of

grain in a season. On this basis the cost per acre for harvesting and threshing with a stationary thresher would amount to \$4.03 per acre. With a combine cutting thirty acres per day the cost per acre would be \$2.10. Where a swather was used the additional cost was placed at 44 cents per acre. Even with the use of the latter attachment the advantage is very substantial. The precise saving in cost per bushel depends on the yield. With such an area, where the yield is 10 bushels to the acre, that is, where there is a light crop, harvesting costs appear to be reduced by approximately 20 cents per bushel by the use of the combine. A crop of 20 bushels to the acre is estimated to give a saving of about 5.5 cents per bushel, and with a yield of 40 bushels to the acre the gain is held to approximate 5 cents per bushel. The use of the swather reduces this gain somewhat, but still leaves a large margin of advantage with the combine.

Since the combine is an expensive machine, the burden of overhead increases as the area to be harvested decreases in extent. This may be met, to a certain degree, by making use of the smaller types of combines. But even with the 8-foot machine, where the area to be harvested is less than 60 acres, the binder is more economical. But the advantage of the binder and customs thresher over the combine in these instances is offset by custom work being done with the combine. The returns from customs cutting may enable an owner with small acreage to use a combine with advantage, or by patronizing a neighbour he may share in the benefits of its use. On the great plains in the United States it is reported that over one-half of the combine owners are doing some customs work with their machines. The saving in harvesting costs and the elimination of the fall labour problem go far to explain the revolutionary suddenness with which the machine is being adopted in the Canadian west.

In some instances the truck and the tractor have preceded the combine, but where this is not the case, the influence of the latter has been to accelerate the trend towards power traction upon the farm. The saving in time and labour accomplished by the truck in hauling grain or stock to the shipping point is almost as great as that effected by the combine. By the use of small tractors in the dry areas it has been found possible to put in the crop at an earlier date in the spring and to take it off the land in the fall with greater expedition. Where a farmer goes over to the use of power machinery, a demand for horses is largely eliminated and this in turn reduces the requirements for feed grain. More land is available, too, for wheat. In this connection it is significant that in Alberta the average acreage per member signed up under the first series of contracts for the Wheat Pool was 92.72. Under the second series, which began with the 1928 crop, the average acreage in October of 1928 stood at 116.2 per member or an increase of 23.44 acres. Another aspect of the use of the combine is that since its maximum use is secured where the acreage is fairly large, 400 or 500 acres, there appears to be a tendency on the part of half-section farmers to rent or buy more land in order to secure the full economies of power farming. The whole trend of power farming thus appears to be towards larger units of production, with a lessened population upon the land for a given area. The use of the combine and the truck not only accelerates the rate at which grain is delivered to the local shipping point, but it also begins the flow earlier in the season. Grain deliveries begin as soon as cutting sets in. In a year with a favourable season, such as 1928, a much greater burden is thrown upon the handling facilities and upon the railways.

How far the movement towards power machinery will

go cannot as yet be predicted. The autumn of 1928 in the Canadian west has been generally conceded to have been ideal for the use of the combine. The harvesting of the crop was carried through with scarcely any interruption on account of wet weather. The season was exceptionally sunny and dry. The problems that the use of the combine raises touch especially the effect of this method of harvesting upon the quality of the wheat. Experience has shown that where a combine is used, a crop must stand for 10 days or two weeks longer than when it is to be cut with a binder. The grain must be dead ripe for the machine. When the combines were first put into the wheat fields in western Canada, the wheat was cut before it had sufficiently matured. As a result, it was of lower grade and the amount of moisture in the berry made it difficult to warehouse. The development of the swather has helped to solve this problem, but where grain is to be stored, one of the problems that the use of the combine raises is the proper ventilation of bins. Another serious objection raised against the adoption of the combine is its influence upon the varieties of wheat selected for growth. The combine favours the production of wheats that have a strong straw and a head that does not shatter easily. Wheats of these varieties do not rank so high in milling qualities of the berry as those which, while possibly not so easy to handle with the combine, can be harvested safely with the binder. Thus, while the use of the combine bids fair to solve the problem of fall labour, on the other hand its use might lead to a reduction in the quality of western Canadian wheat. Only time will reveal how serious this reduction may be.

The drop in cereal prices has created some reaction in favour of the use of work horses instead of trucks, tractors, and combines. The explanation is simple. When a farmer

makes use of power machinery, he must add to his cash costs of production a substantial sum in payment for gasoline. When, however, he is using horses, the farm will produce its own feed, which cheapens with the fall in grain prices. Hence, on balance, it may be cheaper to employ horses, even at the cost of some technical efficiency in putting in the crop and removing the harvest from the land.

VIII. MAINTAINING THE QUALITY OF CANADIAN WHEAT.

For many years the grain growers of the prairie provinces have been extremely jealous of the reputation and proud of the quality of the grains grown within their borders. And this attitude is not without reason. A long sequence of prize awards at the chief grain exhibits which have been held in North America attest the high excellence of western Canadian cereals. But even more significant than the awards of the show room, is the solid reputation that Canadian grains, wheat especially, have built up in the markets of the world. This reputation for good grain has not been achieved by accident, but is the result of deliberate effort and lengthy experimentation in the breeding of superior varieties. At an early date in the opening of the west the importance of good seed was clearly recognized and this consideration has never been lost sight of since. For the initial impetus in this direction much credit must be given to the Canadian Pacific Railway and to the Federal Department of Agriculture.

The first wheat brought into western Canada, as we have seen, came with the Selkirk settlers. Very little is known about the variety of wheat introduced at that time. Documentary evidence exists to show that the flour produced from it was of poor quality, but it is impossible to determine whether this lack of excellence was due to the nature of the wheat itself or to the lack of proper cleaning and grinding

facilities. An importation of seed wheat was made in 1820 from the state of Wisconsin and again in 1868, but the varieties imported on these occasions is unknown. It is possible that the later date marks the introduction of Red Fife Wheat into the Canadian west.

The romantic story of the development of Fife wheat in the province of Ontario about 1842 has been well told by Professor Buller in his *Essays on Wheat* and need not be repeated here.³ The home of Red Fife has been traced to Galicia in central Europe, which lies in about the same latitude as western Canada. Red Fife became the standard variety in Ontario, and as early as 1860 passed into use in the United States in Wisconsin. From Wisconsin it appears to have worked its way north through Minnesota and the Dakotas into Manitoba. The actual date of its appearance in the settlement upon the Red River is not discoverable, but when the original Red Fife stock in Ontario showed signs of deterioration, Red Fife wheat was taken from Manitoba to Ontario in 1876. This implies that the quality of Red Fife grown in the west was well established and gives credibility to the suggestion that it was introduced at least as early as 1868.

The year 1882, however, marks the real establishment of Red Fife as the chief variety to be grown in western Canada for many years. The opening of the west by the railways was creating the possibility of an export trade, an opportunity for which the farmers had long been waiting. Of great importance, also, was the introduction into Minnesota in 1870 of technical improvements previously described in the methods of milling wheat, whereby it was found feasible to separate bran and middlings from the flour. When these improvements came, the value of hard spring

³Buller: *Essay on Wheat*, Macmillan Company of Canada, Toronto.

wheat for flour-making purposes was revealed. The merits of the hard Red Fife wheat were fully known to the American millers, who bought it with eagerness. There was, therefore, an incentive to the farmers in the Canadian west to grow this wheat. In the autumn of 1882 James Hartney, who had imported a car load of Red Fife into Manitoba for seed purposes, carried off the prizes offered by the Canadian Pacific Railway Company and the Hudson's Bay Company at the Winnipeg exhibition for the best ten bushels of wheat. This interested the railway company, and it bought wheat from Hartney for various experimental farms it was establishing along its line. It also supplied Red Fife to new settlers who were planting their first crops in the west. The Federal Government was induced to remove the duty on Red Fife wheat when imported into the country for seed purposes. The C.P.R. further seconded this encouragement by bringing in Red Fife seed wheat free of charge.

The outcome of these efforts was that after 1882 Red Fife wheat soon replaced the softer wheats which had obtained a foothold in the country. In the early 'eighties it became the standard variety of wheat grown in western Canada. This condition endured for about 25 years until the introduction of Marquis wheat. As late as 1912 the official grades set forth in the Canada Grain Act provided that the upper grades should have a proportion of hard Red Fife wheat ranging from 75 per cent for No. 1 Manitoba Hard to 45 per cent for No. 2 Manitoba Northern per bushel.

But while Red Fife wheat very early became the standard variety of spring wheat grown in western Canada, it was not long until efforts were begun to produce a wheat even superior to it. At this juncture an important action was taken by the government of Canada. In 1886 the

Federal Government established the Dominion Experimental Farm System with branches throughout Canada. One of these branch farms was established at Brandon in Manitoba and another at Indian Head, then in the Northwest Territories and now in the province of Saskatchewan. One of the first problems apprehended by Dr. Wm. Saunders, Director of Experimental Farms, was the importance of developing a superior variety of spring wheat for the Canadian west. With this aim in view there was initiated what was to prove a long period of careful study and experimentation in the plant breeding of wheat, a sustained effort which scored its first great success in the development of Marquis wheat about 1909. Experimentation, however, has continued with the object of developing varieties of wheat superior both to Red Fife and to Marquis for cultivation in western Canada.

An ideal variety of spring wheat for the prairie provinces should possess a combination of qualities which fit it for the soil and climatic conditions of western Canada. The requirements are a variety of wheat that (1) will yield well; (2) will ripen early enough to escape the late summer and early autumn frosts; (3) will be resistant to rust and smut; (4) will be high in protein; (5) will have sufficient strength of straw to remain upright in years of heavy yield; (6) will carry heads that do not shatter too easily in harvesting and threshing, and (7) will not bleach or sprout easily after cutting. It is scarcely necessary to point out that a combination of these qualities is not easy to secure. Moreover, the variety of soils and climatic conditions in different parts of the west makes it almost impossible that the same variety of wheat should prove ideal in all circumstances. The specific defects of Red Fife were that it matured very often too late

to escape the early frosts in many parts of the west, was very susceptible to stinking smut, and was inclined to lack strength of straw.

Marquis wheat represented a really great advance over Red Fife. Writing in 1928, Mr. L. H. Newman, Dominion Cerealist, declared: "The chief points which distinguish Marquis are its ability to mature from six to ten days earlier than Red Fife; greater strength of straw than the latter variety; non-shattering habits as contrasted with the easy shattering tendency of Red Fife; its greater resistance to stem rust; and its greater productiveness. It is probably safe to say that no new cereal variety thus far introduced anywhere has excelled in so many points or has taken the place of other varieties over so wide an area. Its introduction into Canadian agriculture completely overshadows in importance any other single event, marking as it undoubtedly does a new epoch in the agricultural life of the Dominion. By 1915, only six or seven years after its introduction, Marquis had taken the lead over all other varieties throughout the wheat-growing area of the western provinces, which lead it increased so rapidly that within ten or twelve years from its first introduction it is credited with having occupied not less than 90 per cent of all the spring wheat area of the Dominion. Even in the United States Marquis is conceded to be the most generally grown spring wheat variety, occupying in that country between 60 and 70 per cent of the entire spring wheat area."⁴ It has been estimated that the farmers of the Canadian west have been able to realize probably \$100,000,000 more from their wheat crop annually by growing Marquis than would have been possible had they still to rely upon Red Fife.

⁴Newman. *The History and Present Status of Wheat Production in Canada*, Ottawa: Dept. of Agriculture, pamphlet No. 89, N.S., p. 77.

Experimentation continues with a view to improving upon Marquis wheat, for the need of a still earlier variety has been urgently felt in many districts. The early frosts of 1928 undoubtedly reduced the value of the wheat crop by at least \$50,000,000. Two varieties that have received extensive tests have been named Prelude and Ruby. Both represent crosses which have the Fife variety in their ancestry. Both ripen earlier than Marquis, but neither is as productive, and in addition Ruby wheat has a tendency to shatter and to produce rather weak straw. Garnet wheat is also the product of several crosses which united Red Fife with earlier-maturing varieties. Whilst it ripens five to ten days earlier than Marquis, the colour of the flour produced from it is less white and there is a slightly lower bread yield. It is not considered, therefore, quite equal to Marquis.^a

Reward is another new wheat which has begun to attract attention, and its tests indicate that it will have very great usefulness. The immediate aim of the plant breeders is to produce a wheat which combines the excellent quality and productiveness of Marquis with earlier-ripening habits. Since wheat stem rust has come to constitute a menace to the wheat crops of Manitoba and parts of Saskatchewan, special attention is also being devoted to the development of varieties which are able to resist this scourge and still produce satisfactory yields of the desired quality. In addition to these varieties of spring wheats durum wheats are cultivated in areas where rust or moisture conditions are not favourable to the production of Marquis. For the crop year 1928-29 the total amount of durum wheat offered for inspection was just under 50,000,000 bushels. Durum wheat finds its market in the production of macaroni and similar products. In southern Alberta an area has been found suitable to the

^aSee page 214.

production of winter wheat. Wheat from this area is known as Alberta Red Winter, but the amount produced does not exceed 1,000,000 bushels.

Oats and barley, the most important crops after wheat, have also received attention from the plant breeder, with most beneficial results. Greatly improved varieties of oats have been secured by crossing and selection. The efforts of the plant breeders to secure a barley that will be acceptable to the British brewers has already been mentioned. But while the coarse grains have not been neglected, the emphasis has naturally been laid upon attempts to improve the quality of wheat.

The farmers of western Canada are most keenly interested in the development of varieties of wheat that will mature earlier and be resistant to frost and rust, but it is to their credit that they have shown little tendency to sacrifice the solid reputation built up for western Canadian wheat by accepting varieties which produce a berry of inferior quality. They have grasped clearly the importance of producing a cereal that will command every confidence in the world's markets. They are alert to test new varieties and to co-operate willingly with plant breeders, but they have displayed a wise conservatism about the adoption of new wheats until such are very fully tested. The important work of research and experimentation continues to be pursued with energy by the Dominion Experimental Farms System, the National Research Council, and by the provincial institutions of the western provinces. The Federal Government maintains at Winnipeg a unique research institution devoted entirely to rust problems connected with grain. The Canadian Seed Grain Association has provided a method of contact between the scientists and the farmers and has

also interested private individuals in the work of developing superior varieties of grain.

Nevertheless, from time to time reports arise in the world's markets, particularly at Liverpool, that the quality of western Canadian wheat is declining. Such reports may mean either that the percentage of the whole crop found in the higher grades is becoming less, or that the protein content or strength of the wheat berry is no longer as great as it was. In neither particular is there evidence over a period of years to show that the quality of western Canadian wheat is deteriorating. Vicissitudes of weather undoubtedly mean a variation both in the percentage of wheat contained in the upper grades and in the quality and percentage of protein content from year to year, but the records do not show any discernible trend downward. Of the crop harvested in the autumn of 1929, out of 161,680 cars of wheat that were inspected, 140,822 cars or 87.10 per cent were found to grade No. 1 Hard, 1, 2 and 3, Northern. Inspections for the crop of 1930 also showed a very high percentage of cars to be contained within these grades.

With respect to protein content or strength of the wheat, an examination of 2,500 samples of the 1930 crop shows that the average protein content for these grades was 13.2 per cent, practically the same figure as that found for the crop of 1929. Over 50 per cent of the cars examined contained wheat with more than 13 per cent protein, while individual cars went as high as 19 per cent. These figures, indicative of the high quality of Canadian Northern spring wheat, have been confirmed by the excellent results obtained from baking tests of the Northern grades, as indicated by loaf volume and texture, both when baked as straight grades and when blended with typical soft wheat.

IX. SOIL EXHAUSTION AND THE WEED MENACE.

This chapter should not be concluded without a reference to a disquieting aspect of grain production in certain parts of the west, namely, the gradual decline in yield per acre. Although every third or fourth year the land is allowed to remain fallow and is given careful cultivation, there is some evidence that the soil is becoming depleted of essential plant foods. This condition appears most markedly in southern Manitoba, southern Saskatchewan, and south-eastern Alberta. In Manitoba the land has been cropped for a generation. The statistics of production do not fully reveal the trend, as the yields from newly cultivated fertile virgin soils balance somewhat the losses from worn-out soil. On the other hand, poorer soils coming into cultivation are being devoted to wheat. At any rate the fact is, the average yield per acre is becoming less. According to local government returns the average yield per acre in Manitoba for the thirteen years, 1890-1902, was 19.22 bushels per acre. This average may be compared with returns compiled for later periods by the Dominion Bureau of Statistics. The decennial average for spring wheat for Manitoba for 1909-18 was placed at 17.3 bushels per acre and for 1919-28 the official estimate is 15.9 bushels per acre. Early records for Saskatchewan and Alberta go back to territorial days. Returns for the five years 1898-1902 show an average yield of 19.53 bushels of wheat per acre. In Saskatchewan the decennial average for the period 1909-18 is 17.50 bushels per acre and for the ten years, 1919-28, 15.4 bushels per acre. In Alberta the figures for 1909-18 for spring wheat are 19.0 bushels per acre and for the later period 17.9 bushels per acre. It will be noted that there appears to be really a greater decline in yield in the newer provinces than in Manitoba. This is probably due to the swing in Manitoba towards mixed

farming, which has had the effect of taking poor wheat lands out of grain growing and thus has helped the average return. Diversification of agriculture is the remedy that technical agriculturists are urging upon the grain grower faced with soil exhaustion. There are, however, areas where it is extremely difficult to diversify on account of lack of moisture. It is noteworthy that since 1928 trials which were begun at experimental stations are being carried out with phosphates with a view to establishing whether this is an economical method of maintaining yield per acre.

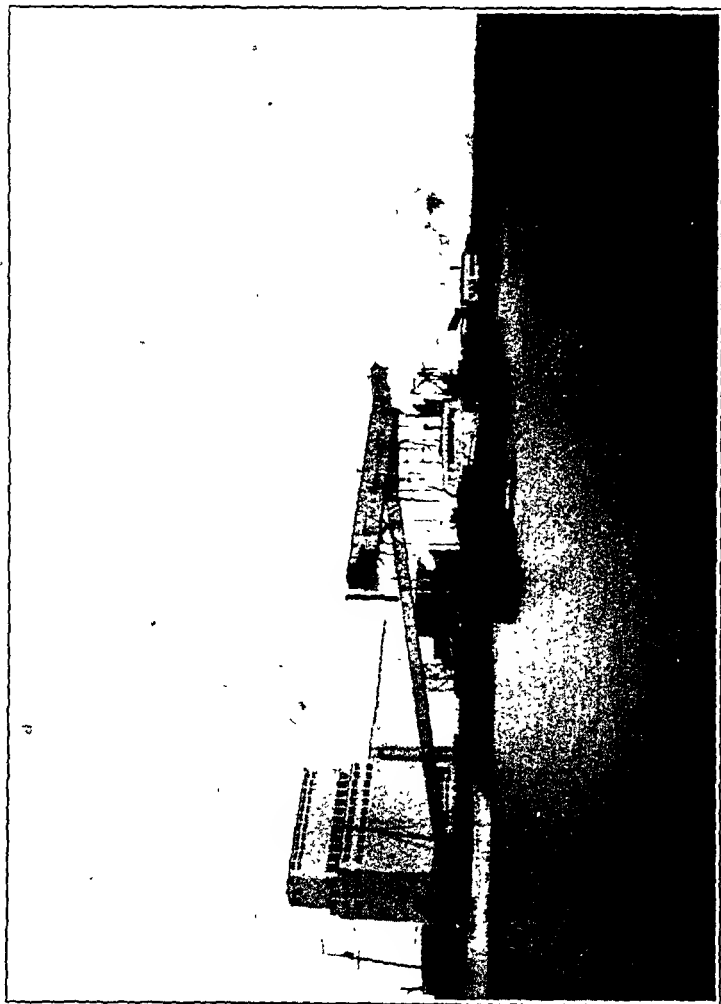
In addition to declining fertility, the western farmer also is confronted with a serious situation arising from the growth of weeds. The weed problem is becoming more acute despite efforts to cope with the situation. Weeds now entail a heavy economic loss upon the farmer; first, by choking the growth of grain and thus reducing the yield per acre; second, by the costs entailed in threshing and carrying weed seeds to terminal points; and, third, by the cost of cleaning valueless dockage out of the grain. The dockage set on wheat, oats, barley, and flax received at terminal elevators at Fort William and Port Arthur for the year ending August 31, 1913, amounted to over 100,000 tons. Transportation charges on this quantity of material from the grain fields to the lake ports were estimated at over \$650,000. The dockage cleaned out of the crop of 1923 totalled over 275,000 tons with a freight loss to the farmer estimated at \$1,500,000. It is true that part of this dockage consists of broken kernels of grain which can be sold as screenings, but not less than forty per cent of the total dockage consists of weed seeds. Though some steps are being taken by the various provincial governments to combat the weed menace, by the employment of weed inspectors with powers in certain circumstances to order the burning of a weedy crop, very little positive

progress in weed control is apparent. The problem is utterly beyond the individual farmer, whose best efforts can be set at naught by a careless neighbour.

Farmers sometimes try burning the stubble after the grain is removed, but if the soil is light this may induce soil drifting. A large part of the care involved in summer fallowing at the proper time is to eliminate weeds. Cleaning crops, that mature early, are also used. None of these methods have checked the spread of weeds. The problem is a very large one, requiring concerted action, and involving all land whether in cultivation, unoccupied, or used as right of ways by railway, or as county or village roads.

Neither the problem of soil exhaustion nor that of checking weed growth can be said to be in a satisfactory state at the present time in western Canada. Until successfully mastered, apart from all other factors, they contain a threat to the future welfare of the western grain grower.

APPENDIX



STEAMER *Waikeke* LEAVING DOCK AT CHURCHILL, SEPTEMBER, 1931.

THE HUDSON BAY ROUTE

ALTHOUGH the Hudson Bay Railway and the Port of Churchill have not been opened officially to general traffic, all of the preliminary steps that were necessary have been taken to make this route available to shippers of western grain. The Hudson Bay Railway has been completed. The Dominion of Canada has also erected a terminal or transfer elevator for the storage of grain and delivery to vessels. Radio stations have been provided to direct ships through that portion of the entrance channel where compass readings, on account of proximity to the magnetic pole, are unreliable, while other navigational aids have been established. Finally, in September of 1931 two tramp steamers were chartered for test shipments.

I. THE TEST SHIPMENTS.

The first of these vessels, the *Farnworth*, arrived at Churchill on September 10, was loaded with 277,000 bushels of wheat, sailed on September 17, and arrived at the Albert Docks, London, on October 4 after a continuous voyage of 16 days. The second vessel, the *Warkworth*, arrived at Churchill on September 11, was loaded with 267,769 bushels of wheat, sailed on September 21, and arrived at Antwerp on October 13. The arrangements connected with bringing these tramp steamers to the new port were made by the Dominion Government, while the shipments were provided by Mr. John I. McFarland, of the Canadian Wheat Pool. The shipping agents were Thomas Harling & Son, Limited, of Montreal. No untoward incidents marked the voyage of

these vessels into Hudson Bay nor on their outward voyage to Europe. Conditions in the Hudson Straits in 1931 were reported to be the best in many years. The successful completion of the trial marks the end of the first stage of the project to give western Canada more convenient access to the markets of Europe.

The scheme of building a railway line to Hudson Bay and of establishing an ocean port on that body of water has been before the public of Canada for fifty years. The prairie provinces have always favoured such an undertaking, while eastern Canada has demurred on the ground that the cost of the enterprise would exceed the benefits. The Hudson Bay Railway was only built after much hesitation and delay. The accomplishment of the project ultimately was due to the increasing importance of western Canada in national affairs and to a sentiment, deep-seated in the minds of many western Canadians, that such a route would bring the advantages and conveniences of ocean transport a thousand miles nearer to the western producer.

II. FEATURES OF THE ROUTE.

There still remains to be learned, however, to what degree commerce will avail itself of the transportation facilities that have been provided. In the years leading up to the completion of the project the economics of the enterprise were keenly discussed, and widely different opinions were expressed with regard to the net economic benefits that would be derived from the route. Here it is proposed to deal only with the carriage of grain, without discussing the total volume of traffic that may seek the route or the deeper problem of cost versus benefits. It must be pointed out, however, that traffic breeds traffic, and if the route attracts a substantial volume of inward traffic, this will create a demand for

cargoes outward-bound, and thereby benefit the traffic in grain. Moreover, the building up of cargoes composed of various commodities for shipment outwards would provide the conditions that would make possible parcel-shipments of grain.

With respect to distance of railway haul Churchill stands substantially in the same relationship to the western grain fields as Fort William and Port Arthur. Similar rates will also apply, since the Canadian Government has already announced that grain will be carried on the basis of rates established to the lake ports under the Crow's Nest Pass agreement. Handling charges through the government elevator at the port will be undoubtedly the same as those that rule at other terminals.

The distance from Churchill to Liverpool is 2,967 miles, from Montreal 3,007 miles. These distances are practically the same. Hence the great advantage the northern port possesses is the elimination of a distance equal to that between Fort William and Port Arthur and Montreal. At the present time freight and handling charges on this section of the eastern route approximate $8\frac{1}{2}$ cents per bushel. This cost may be reduced somewhat as the full effects of the construction of the New Welland canal makes itself felt. Moreover, it has been estimated that the completion of the St. Lawrence deep waterway would lead to at least a three-cent reduction in grain freights between the head of navigation on the Great Lakes and Montreal. Nevertheless, it will be apparent that inclusive ocean rates might be appreciably higher by the Hudson Bay route than they are from Montreal and yet the balance of advantage would lie in putting the traffic through Churchill.

On the other hand, it must be recognized that there are certain conditions which the northern route must face that

will militate against its utilization to the largest degree technically possible. In the first place, the port is so far north that there is difficulty in providing the usual facilities of a modern town. Frost penetrates in the ground to great depth, and since it remains close to the surface throughout the short summer, the waterpipe line is being laid on piling and covered by a four-foot layer of muskeg peat moss as a protection. The fresh water supply has to be piped from fresh water lakes three miles distant. Reservoirs within the town will require heating equipment. Difficult problems also arise in connection with the disposal of sewage. It is considered that sewage will require to be carried in boxed surface drains, heated to prevent freezing. It is proposed to heat the new town with a central heating plant which would at the same time meet the sewage necessity. Nearly all supplies of food and material will require to be shipped to the port. These conditions suggest that living costs at Churchill will be relatively high.

In the second place, the short season and the remoteness of the place raises the problem to what degree Churchill can hope to become a terminal for grain storage as distinguished from a transfer point for shipments concentrated in the interior. Grain at Churchill would be out of position for delivery except immediately preceding and during the shipping season. It would not be back-hauled and forwarded to other markets. In any event, for anything less than cargo shipments, on account of lack of sailings there would not be the range of markets in foreign countries open to grain at this port. Another factor that would enter into the situation would be the absence of a local market for grades of grain unlikely to be exported.

These circumstances in themselves do not bear directly upon the volume of grain that may pass through the port.

but rather enforce the idea that the grain business of Churchill will be confined to the transfer of supplies assembled elsewhere and already sold for export. The trial shipments were carried at a cargo rate of three shillings and nine pence per quarter, or approximately in Canadian money, a rate of $11\frac{1}{8}$ cents per bushel. It is understood that this rate included additional insurance premiums on the hulls of the vessels which carried the cargoes. The insurance rate on the cargoes was at the rate of \$1.83 per \$100 of value. For the purpose of ensuring trial shipments the Government of Canada took steps to charter the vessels required and arranged for the shipment. The rates quoted to the shippers were recognized to be experimental and were based on the through rate from Fort William to London via Montreal.

III. LIMITING CONDITIONS.

The limiting conditions which will determine in the long run the volume of grain which will pass through Churchill are the length of the season that the port is open and the rate on freight and insurance that will prevail upon this route. The average period in each year for which the Bay is safe for shipping lies between the freezing of the approaches to the Bay from the ocean at the beginning of the season and the freezing of the shore waters at the close. The Imperial Shipping Committee found that there appeared to be little danger of shipping becoming ice-bound at Churchill before November, but expressed no opinion upon the date of opening.¹ The estimates of experts on the length of the season vary from 60 to 90 days. It is recognized that the more exact ascertainment of the period must be a matter of experience. The Joint Hull Committee has fixed the additional rate of premium for the suspension of the North

¹ Cmd. 3586, 1930.

American Warranty in respect of vessels passing Cape Chidley inward bound on and after August 10, and leaving the last loading port in Hudson Bay on or before September 30. Just as in the case of cargo rates these dates must be considered as experimental until further data from experience become available.

In the matter of freight rates the important feature is that relating to marine insurance. Insurance of hulls of vessels falls into two categories, "time" and "voyage", the latter being now comparatively rare. The vast majority of vessels, whether liners or tramps, are insured under 12 month policies, the policies on tramp vessels being generally subject to what are known as "Institute Hull Clauses" and "Institute Warranties". These represent standardized conditions of insurance and scope of navigation drawn up by the Joint Hull Committee. By these warranties the ship-owner covenants that his ship shall not engage in certain defined trades which the underwriters regard as involving extra risk. The British North America Warranty binds the vessel not to enter or sail from any port or place in British North America on the Atlantic coast, its rivers or adjacent islands, except the port of Halifax and for bunkering purposes only the ports of Louisburg and Sydney. Thus Montreal and Quebec as well as Churchill come within the scope of the B.N.A. Warranty.

But in the form of insurance policies containing these warranties there are clauses providing for their suspension if the ship-owner pays an additional premium. That additional premium, unlike the basal premium, which is the result of competition, is fixed on the recommendation of the Joint Hull Committee. The premiums charged for the insurance of cargoes are not the subject of recommendation by any committee.

The additional premium required for vessels entering the St. Lawrence is one per cent of insured value per voyage during the winter season and one-half per cent per voyage during the summer season, with a limit of total payments of three per cent per winter and one-and-a-half per cent in the aggregate for summer, however many voyages made. A voyage begun in one season and completed in another would be charged at the rate of three-quarters of one per cent. Summer months extend from the first of May to September 30.

For the navigation season of 1930 for full cargoes of grain on tramp steamers using the St. Lawrence from the opening of navigation to October 31, the rate was 27½ cents; from November 1 to November 15, 35⅜ cents, and from November 16 to November 30, 39⅜ cents per \$100 value of cargo.

The Imperial Shipping Committee pointed out that for a tramp steamer of 7,500 tons dead-weight insured for £45,000 (\$225,000) entering the St. Lawrence, the additional summer premium would work out at £225 (\$1,125) per voyage.² For the same vessel therefore, with a rate of 3½ per cent the additional premium for sailing into Churchill would amount to £1,575 (\$7,875). In addition there would have to be reckoned the higher insurance charge upon the value of the cargo. Undoubtedly the successful outcome of the test shipments should create conditions favourable to a considerable reduction in the rate, but until several years have passed it will be scarcely possible to have available a sufficient body of data to establish definitely the amount of additional premium necessary to protect the underwriters.

It is clearly impossible at the present time to form an exact idea of the amount of grain that eventually may go

²Cmd. 2447, 1925.

out by the northern route. But in addition to the factors that have been mentioned above it is important to note that the port will have to contend for some years with the mere fact that it is the tendency of business to run in accustomed channels. This tendency is powerfully reinforced if large investments would be endangered by using new channels of export. The port of Vancouver required five years to establish its possibilities. Since the port of Vancouver had behind it an active and aggressive city, which is lacking in the present instance, it may well be that the full drawing power of Churchill for grain will not be determined for several years.

Should a considerable volume of grain move out via Churchill, the effect upon storage facilities would be to hold a larger quantity back in the interior terminals at Moose Jaw and Saskatoon instead of moving it eastwards to the head of the lakes. If stored at points in the interior, it could be despatched either by way of Hudson Bay or by the eastern route, as conditions determined.

The grain elevator constructed at Churchill has a total storage capacity of 2,500,000 bushels. It is able to load three ocean vessels simultaneously. The track sheds permit of unloading 400 grain cars per day. In a season of two and one-half months these facilities could transfer grain from the grain cars to the ocean vessel to the amount of 28,000,000 bushels without difficulty. Undoubtedly, if the flow of grain were such as to require additional construction, this would be forthcoming in due course from the Dominion Government. We may compare the figure of 28,000,000 bushels with export clearances of grain from the port of Montreal between August 1 and October 15. During the season of 1931 this amounted to 17,770,000 bushels.

INDEX

- Advances to farmers, 309
- Agents, Country Elevator, 111-115;
316-317
- Alberta, 41
- Alberta Farmers' Association, 48
- Alberta Farmers' Co-operative Ele-
vator Company, 49
- Alberta Pacific Grain Company, 306,
326
- Allen, Prof. Wm., 458, 466
- American Civil War, 17, 20
- Anderson, W. A., 321, 324
- Appeal Tribunals, 208-209
- Argentine, 55, 419, 422, 425, 436
- Australia, 419, 436
- Balkan Countries, 419, 420
- Barley, 9, 20, 21, 416, 440-441
- Bank Act, 235, 356
- Banks, 347, 426
- Bawlf, W. R., 321, 322
- "Bear Speculators", 291
- Bégon, 4
- Belbeck, 459-463
- Belgium, 414, 439
- Biochemical Staffs, 428
- Board of Grain Commissioners, 46,
151, 153, 262; powers, 366; 381-382;
administrative functions, 388
- Board of Grain Supervisors, 58-61,
139
- Board of Railway Commissioners, 134,
- Bond, transportation in, 18
- Bonding, 372-3; 389-392
- "Break of the beam," 97
- Broomhall, G. J., 30
- Buffalo, 85; port of, 245-247; mills,
415-416
- Bulk freighter, 238-241
- Bulk-heading cars, 134-136
- "Bull" speculators, 291
- Buller, Prof., 479
- Bunge, 327
- Calgary, 144
- Canadian Council of Agriculture,
- Canada Grain Act, 46, 190, 376
388.
- Canada Grain Act, Revision of
65-67, 386
- Canada Malting Company, 416
- Canadian National Railways, 120-
139-140, 385.
- Canadian Northern Railway, 47, 1
- Canadian Pacific Railway, 37, 8
118, 125, 131, 139-140, 478, 480
- Canadian Seed Grain Association
- Canadian Wheat Board, 61-64
- Canal boat carriers, 248-249
- Carry-overs, 74-77, 420-424
- Car Order Book, 125-129, 132
- Cars, distribution, 122-125; cap
140; stoppage in transit, 141-
- Cash Closing Price Committee,
- Cayley, Hon. Wm., 12
- Central Selling Agency, 338-340
- Certificates, 192-3; 204; "certi
final," 143, 270, 369
- Champlain, 3
- Charges, country elevator, 99; ter
elevators, 181-182; inspection
weighing, 212-214; commissio
- Charters, 392
- China, 410, 439
- Churchill, 491, 493-494
- Civil Service Commission, 389
- Cleaning grain, 109-111; 180-18
- Clearing Association, 297-299
- Climate, 448-454
- Coastwise shipping law, suspensi
244
- Combines, 115, 472-478
- Concentration in grain trade, 3
- Corn Laws, 12, 18, 401
- Crerar, Hon. T., 325

- Crop estimates, 317
 Crows' Nest Pass Agreement, 136-138;
 - railway, 47
 Cutten, Arthur W., 284
- Davidson, Alexander, 6
 Davis, Edward, 27
 Delaisi, 428
 Dockage, 96, 487
 Dominion Flour Mills, 405
 Dominion Malting Company, 416
 Dreyfus, 327
 Duff, Mr. Justice, 156, 378
- Eastern Route, 230-265
 Edmonton, 144, 449
 Electric Elevator and Grain Company,
 320, 366
 Elevators, country, 29, 43, 73, 85-118;
 Eastern, 43, 253; terminals, 43, 143-
 182; Dominion Government, 46, 384-
 388; capacity, 73; public terminal,
 148-152; private terminal, 157-164;
 169, 170, 364; hospital, 161-162;
 companies, 304-313; fire loss, 316
 Equity, Society of, 48
 Erie Canal, 18
 Erin, 27
 Evans, R. T., 324
 Examiners, Board of, 32
 Exchequer Court, 155
 Expenditure by Board, 395
 Experimental Farms, 481, 484
 Exports, forbidden, 8, 14; from Upper
 Canada, 14, 19; wheat, 29, 42, 74, 77,
 149, 419; organizations, 327; duty,
 415; markets, 418-444
- Farm management, 458-462
 Farm storage, 117
 Farnworth, 491
 Fay, C. R., footnote, 303
 Fields, C. C., 327
 Financing the crop, 42; the grain
 trade, 356-374
 Five Years' Contract, 331-337
 Flaxseed, 417
 Floods, 23
 Flour, 5, 9, 13, 43, 399, 409-410; mills,
 400, 406, 409
- Fort Garry, 280
 Fort William, 143-146, 230-231
 Fur trade, 4
 Futures, 289, 291-297, 301-303
- Garnet wheat, 214-217, 483
 Gaspé, Lt.-Gov. of, 7
 Georgian Bay ports, 241-244
 Germany, 410, 439
 Gerrie, Robt., 27
 Government ownership, 162
 Graded storage receipts, 96
 Grades, 32; commercial, 34, 184; con-
 tract, 189; at country elevators, 96,
 184-191
 Grading, 195-207
 Grain Growers' Grain Company, 48,
 50, 51
 Grain-growing area, 445-448
 Grain Standards Committees, 32, 192-
 195, 389
 Grant, Prof. H. C., 465-467
 Grasshoppers, 24
 Grievances, 45
- Haldimand, Gov., 7
 Halifax, port of, 257, 496
 Harling, Thos., & Son, Ltd., 491
 Hays, Charles M., 278
 Hedges, 291ff; 308, 371, 424
 Heffelfinger, G. W., 324
 Hoover, Calvin B., 431
 Horn, David, 35
 Hudson Bay Route, 491-498
- Identity preserved shipments, 250-253
 Ile Royale, 5
 Imperial Shipping Committee, 495,
 497
 Imports, 8, 14, 19
 India, 419, 420
 Inspection, 183-229, 395-396
 Inspector, chief, 35
 Institute warranties, 496
 Insurance, 255, 272, 372-374, 496
 Italy, 414, 439
- Japan, 414, 439
 Jay's Treaty, 231
 Joint Hull Committee, 495
 Keynes, J. M., 433

- Kneeland, E. W., 324
Kingston, 19, 20
- Labour, 470-472
Lake freights, 257-263
Lake of the Woods Milling Company, 404-405, 407-408, 411-412
Lake Shippers' Clearance Association, 232-238, 364, 368
Land organization, 454-457
La Vérendrye, 231
Law, R. S., 325
Leakage, 130, 132-134
Licensing, 389
Loading platforms, 88-90
Loans to farmers, 65; to country elevator companies, 358; on grain in terminal elevators, 364-367; to exporters, 367-370
Lower lake ports, 241-244
- McCabe, 321
McFarland, J. I., 79, 491
McGillivray, Wm., 231
McKenzie, Roderick, 231
McKinley tariff, 22
McWilliams, W. H., 321, 327
Macdonell, Governor, 23
Magill, Robert, 144
Manitoba, 22, 23-38, 39, 41, 49
Manitoba Grain Act, 46
"Manitobas," 30, 190-191, 216, 435
Maple Leaf Milling Company, 248, 404-405, 407-408
Marquis wheat, 41, 214, 436, 481-482
Martin, Wm., 36
Mavor, Professor, 24, 30ff
Mechanization, 470-478
Medicine Hat, 449
Mediterranean, 6
Mergers, 324
Mexico, 275
Midge, wheat, 10, 15
Milling Industry, 399-417
Mixing, 158, 162, 165, 168-177
Moisture content, 185
Montreal, 12, 18, 254-256; Board of Harbour Commissioners, 386; Corn Exchange, 387, 498.
Moose Jaw, 144, 498
- Napoleonic wars, 8
Netherlands, 439, 440
Newfoundland, 410
New Westminster, 275-276
New York, 255
Newman, L. H., 482
North West Territories, 39
Northwest Grain Dealers' Association, 44, 52, 114, 286, 313-318, 364
- Oats, 9, 20, 416
Ocean freight rates, 255, 263-264, 272.
"Off" grades, 184
Offal, 413-414
Ogilvie Flour Mills Company, 86, 404-405, 407-408, 412
Ontario, 15-22
Orient, 274-5, 278
Oswego, 19
Outturn insurance, 260, 262
Overages, 98, 152-157, 377-378
Over-grading, 96
Over-production, 433-434
- Pacific route, 71-72, 266-279
Panama canal, 139, 267
Parkin, George, 29
Paterson, N., 321
Patronage dividends, 51
Peavey, 321, 323
Peace River district, 279, 446, 449, 454
Penalties, elevator agents, 115; car order work, 128
Personnel, under Board, 394-395
Peru, 275
Pioneer, 3, 14, 21
Plaisance, 5
Population, 457-458
Port Arthur, 143-145, 146, 230-252
Port Colborne, 248
Port Mann, 275
Portugal, 7
Production of Grain, 53, 56, 421, 445-488
Prince Albert, 449
Prince Arthur's Landing, 231
Preference, British, 11
Prince Rupert, 72, 140, 277-279
Profits of country elevator companies, 105-108

- Protein content, 217-221, 393, 485
 "Puts and calls," 296
- Qu'Appelle, 449
 Quebec, port of, 8, 9, 10, 256
 Quebec, wheat production, 15-16
 Quota, 441, 442
- Railways, 27-28, 39, 40, 43; rates, 136-141, 273; record shipments, 240-241
 Raudot, 5
 Reciprocity Treaty, 17, 19-20
 Red Fife, 479-481
 Registration of warehouse receipts, 178, 392
 "Regular" elevators, 167
 Re-inspection, 207-208
 Reports, 179
 Research, Grain Research Laboratory, 393-394, 435; National Research Council, 394, 484; rust, 484
 Richardson, James, 321
 Richardson, James & Sons, 19, 27
 Royal Commission on the Grain Trade of 1906, 150, 159
 Royal Commission of 1921, 66
 Royal Commission on lake freight rates, 261
 Royal Commission (Saskatchewan), 387
 Royal Grain Inquiry Commission, 1923-4, 66, 150, 168, 385-386, 411
 Russia, 55, 418, 419, 430-433, 436.
 Rust, 65, 484
 Rye, 417
- St. John, 257
 St. Lawrence Flour Mills, 405
 St. Lawrence route, 247-250, 497
 Sample markets, 164-168, 219
 Samples, official, 194
 Sampling, 195-201
 Sapiro, Aaron, 69
 Saskatchewan, 41, 456
 Saskatchewan Co-operative Elevator Company, 49, 70, 109, 111, 315
 Saskatchewan Grain Growers' Association, 48
 Saskatchewan Pool, 305
 Saskatoon, 144, 498
 Saunders, Dr. Wm., 481
- Scale Inspection, 210
 "Scalpers," 295
 Scottish Co-operatives, 327
 Searle, A. L., 321, 323
 Selkirk Colonists, 23-25
 Sellers, H. E., 321, 326
 Settlements to farmers, 310-312
 Shortages, 211-212
 Smith, Sidney, 321, 325
 Soils, 447-448, 486-488
 Sorel, 5
 Spain, shipments to, 7
 Special bins, 94
 Speculation, 371-372
 Spencer, C. G., 326
 Spot grain, 290
 "Spreaders," 291
 Stamp, Sir Josiah, 302, 303
 Standards' Committees, 192-195
 Statistics, 392-393, 437-438, 463
 Steele, R. C., 25
 "Street" prices, 101-104, 314
 "Subject to Inspector's Grade and Dockage," 101
 Superintendents' country elevator, 306-307
- Taché, Bishop, 24
 Terminal elevators, 29, 86, 143-182
 Terminal elevator companies, 318-319
 Territorial Grain Growers' Association, 48
 Test shipment via Panama, 268
 Thompson, Thomas, 28
 Toronto, 32
 Track loaders, 117
 "Track" prices, 101-104, 314
 Trade and Commerce, Department of, 385, 389
 Traders' Building Association, 287
 Transportation, 14, 118-142
 Treasury Department, 389
 Trucks, 115
 Trunk Lines Committee, 34
- United Farmers of Alberta, 48, 331
 United Grain Growers Grain Company, 48, 50, 305, 324-325
 United Kingdom, 410, 437
 United States, 55, 59, 419, 421, 427, 436

INDEX

503

United States Farm Board, 442
 United States Tariff Commission, 464-465
 Upper Canada, 13, 15-16, 19
 Van Horne, W. C., 159
 Vancouver, 144, 266-274, 276
 Vaudreuil, 5
 Warehouse Commissioner, 46, 150, 151, 162, 364
 Warehouse receipts, 178, 363-367, 392
Warkworth, 491
 Weeds, 487-488
 Weighing, 35, 209-212, 395
 Weighmaster, chief, 35, 133, 177, 209-10
 Welland Canal, 250
 Western Canada Flour Mills Company, 404-405, 407-408, 412
 West Indies, 5, 7, 8

Western Grain Dealers' Association, 313
 Western Grain, Standards Board, 193
 Wheat, 3, 14; winter wheat, 4, 23; exports, 5, 6, 7, 55, 81-82; production, 5, 28, 29, 42, 81-82, 445-488; in Ontario, 15-17; spring wheat, 23; imports, 24; yields, 26; prices, 53-54, 59, 63-64, 76; 423, 425; drying, 221-225; cost 462-470, 486.
 Wheat Export Company, 57
 Wheat Pool, 67-71, 78-79, 117, 329-355, 442, 476, 491.
 Winnipeg, 31, 32, 144, 449.
 Winnipeg Board of Trade, 32, 33.
 Winnipeg Grain and Produce Exchange, 33-6, 38, 44, 45, 51, 52, 159
 Winnipeg Grain Exchange, 52, 58, 165, 167, 280-303
 Young, Hon. John, 18